BEKO

COLOUR TELEVISIONS

Service
Manual
20.2

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SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. It is advised to insert an isolation transformer in the AC supply before servicing a hot chassis.

2. Potentials as high as 33KV are present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by any one who is not competent with the precautions necessary when working on the high voltage equipment. Always discharge the anode of the tube.

3. When servicing observe the original lead dress in the high voltage circuits. If a short circuit is found , replace all the parts which have been overheated or damaged by the short circuit.

4. always use the manufacturer's replacement safety components. The critical safety components marked with ∇ on the schematics diagrams should not be by other substitutes. Other substitute may create the electrical shock , fire or other hazards. Take attention to replace the spacers with the originals. Furthermore where a short circuit has occurred , replace those components that indicate evidence of overheating.

5. After servicing , see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.

6. When the receiver is not being used for a long time of period of time , unplug the power cord from the AC outlet.

7. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazard.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs of the plug.

2. Turn the receiver's power switch.

3. Measure the resistance value with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screw

4. heads, aerials, connectors , control shafts etc. When the exposed metallic part a return path to the chassis the reading should be between 4Mohm and the 20Mohm. When the exposed metal does not have a return path to the chassis, the reading must be infinite.

LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly in to the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 2Kohm 10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an AC voltmeter with high impedance to measure the potential across the resistor.
4. Check each exposed metallic part and check the voltage at the each point.
5. Reverse the AC plug at the outlet and repeat each of the above measurements.
6. The potential at the any point should not exceed 1.4 Vrms. In case a measurement is outside the limits specified , there is the possibility of a shock hazard , and the receiver should be repaired and rechecked before it is returned to the customer.
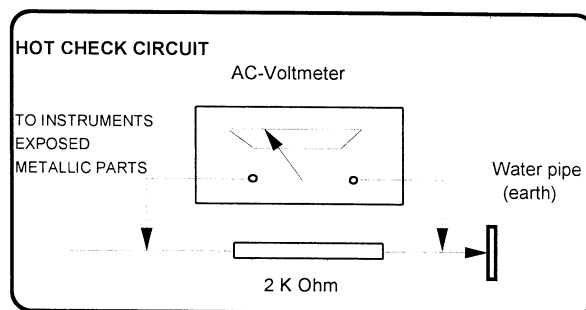
Figure 1

X-RAY RADIATION WARNING
The primary source of X-ray radiation in this receiver is the picture tube. The chassis is specially constructed to limit X-ray radiation. For continued X-ray radiation protection, replace the tube with the same type of the original one.

CAUTION
SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR THE CARBON PAINTED ON THE CRT, AFTER REMOVAL OF THE ANODE CAP.

TECHNICAL SPECIFICATIONS AND THE FEATURES

Power source:　　　　　　　　　220-240V AC ,50-60Hz

Power consumption:

180 W	28"
205 W	29"
265 W	32"
215 W	33"

Aerial impedance :　　　　　　　75Ohm, Coaxial type

Receiving system *:

PAL BG
PAL SECAM BG
PAL SECAM BG DK
PAL SECAM BG LL'
PAL I

Receiving channels:

VHF BAND I , CH2-4
VHF BAND III , CH5-12
CATV CHANNLES S1-S41
UHF BAND CH21-69

CPT		Focus Voltage	High Voltage	B+Supply Voltage
CPT	: 28" 4:3	6.42 - 10.05 KV	27.5KV ±0.5KV	145 V
	28" P.FLAT 16:9	6.35 - 10.20 KV	29 KV±0.5KV	134 V
	28" S.FLAT 16:9	6.78 - 11.39 KV	29.5 KV±0.5KV	130 V
	29" P.FLAT	6.49 - 10.64 KV	29.5 KV±0.5KV	130 V
	29" S.FLAT	7.85 - 9.41 KV	29 KV±0.5KV	133 V
	32" P.FLAT	5.43 - 8.85 KV	29 KV±0.5KV	134 V
	32" S.FLAT	5.58 - 9.54 KV	29 KV±0.5KV	133 V
	33" 4:3	6.35 - 10.2 KV	29 KV±0.5KV	155 V

Grid 2 voltage :　　　　　　　0-1400V
Heater voltage :　　　　　　　6.3±0.2Vrms

Video/Audio Terminals :
AV1 IN　　　　　　　　　　　Video 1Vpp,75Ohm
　　　　　　　　　　　　　　Audio 0.5Vrms, >10Kohm
　　　　　　　　　　　　　　RGB
AV1 OUT　　　　　　　　　　Video 1Vpp,75Ohm
　　　　　　　　　　　　　　Audio 0.5Vrms, <1Kohm
AV2 IN (RCA-OPTIONAL)　　　Video 1Vpp,75Ohm
　　　　　　　　　　　　　　Audio 0.5Vrms, >10Kohm

Operating temperature :　　0-45 Degrees

Safety　　　　　　　: IEC 65 /BS P2N

X-Ray radiation　　　: ACC. IEC 65/BS P2N

- : TV set is produced to receive "one" of this colour and sound systems, which can be changed depending to the countries broadcasting system.

SPECIAL FEATURES :

• Possibility to watch cable broadcasting.

• Capability to show all tuning, programme numbers, all processes automatically on the screen (On Screen Display).

• Provision of the best image on the station being watched with the sensitive station tuning feature (Manual Fine Tuning).

• Automatic switch off between 01 minute to 23 hours 59 minutes when programmed.

• Automatic switch on and off programmable to the desired period.

• No image accompanied automatic sound noise interruption in gaps corresponding to broadcasting breaks while searching for station.

• 100 programme memory.

• Infrared remote control with all the functions.

• Subwoofer (Optional)

• Virtual Dolby (Optional)

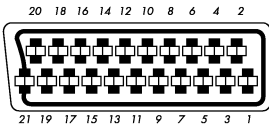• Mosaic picture 12 for widescreen, 4 and 16 for 4:3 TV's.

• Two different Scart connection inlet providing connection of audio, video satellite receiver.

• Possibility to watch domestic and international rapid teletext broadcasts without any need for adding a separate module or connecting a stereo equipment.

• Direct channel selection feature which brings the desired broadcast to the screen either direct when channel number is given or by scanning 121 different channels forward and backward.

• Capability to make the processes easily with the developed menu system. Menu language selection in 8 different languages.

• Automatic switch-off within 5 minutes in case of interruption of the broadcast.

• S-VHS and CINCH inlets for S-Video connection.

• Program scanning, picture freeze and picture formatting features.

• No-tremble image quality with 100 Hz scanning frequency.
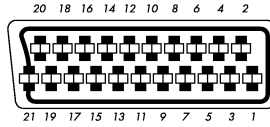
REMOTE CONTROL:
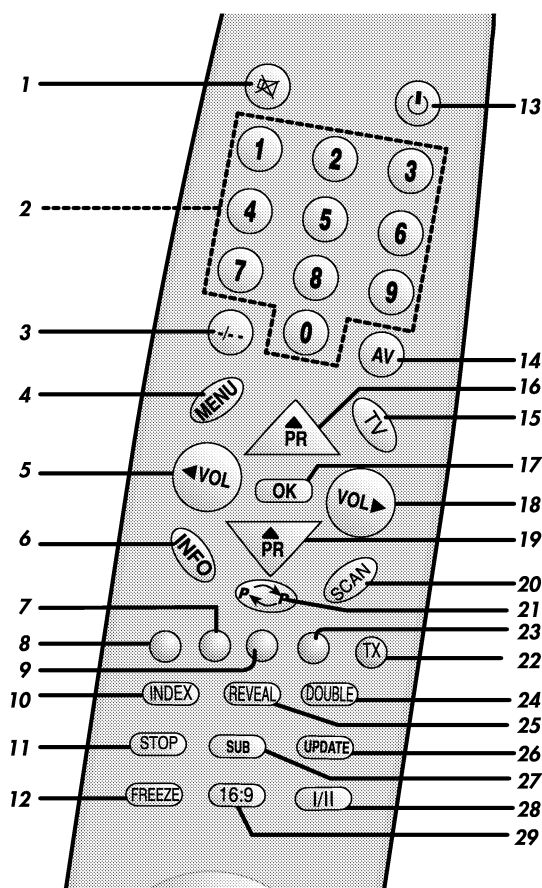
1. Temporary mute button (MUTE)
2. Number assignment buttons
3. Single digit, two digit programme selection button
4. Menu button
5. Volume adjustment decrease button
6. Display button (INFO)
7. Red teletext button
8. Yellow teletext button
9. Yellow teletext button
10. Index button (P100)
11. Stop button (STOP)
12. Picture stop button (FREEZE)
13. Temporary on-off button (STAND-BY)
14. Audio/Video button (AV)
15. Last programme selection button
16. Program winding button (P+)
17. Confirmation button (OK)
18. Volume tune increase button
19. Programme rewind button (P-)
20. Picture scan button (SCAN)
21. Previous programme button
22. Teletext selection button (teletext view button MIX on TV picture)
23. Blue teletext button
24. Page enlargement button (DOUBLE)
25. Question/response button (REVEAL)
26. Temporary TV image button (UPDATE)
27. Sub page button (SUB PAGE)
28. Stereo/Mono and language selection button
29. Picture format button

Scart Soket (AV1) pin Connection

```
20 18 16 14 12 10 8  6  4  2
21 19 17 15 13 11 9  7  5  3  1
```

1. Right sound outlet
2. Right sound inlet
3. Left sound outlet
4. Sound earth
5. Blue earth
6. Left sound inlet
7. Blue
8. Keying
9. Green-earth
10.
11. Green
12.
13. Red-earth
14. Earth
15. Red
16. Blanking
17. Video-outlet earth
18. Video-inlet earth
19. Video outlet
20. Video inlet
21. Socket earth

Scart Soket 2 (AV2) pin Connection

```
20 18 16 14 12 10 8  6  4  2
21 19 17 15 13 11 9  7  5  3  1
```

1. Right sound outlet
2. Right sound inlet
3. Left sound outlet
4. Sound earth
5. Earth
6. Left sound inlet
7.
8. Keying
9. Earth
10.
11.
12.
13. Earth
14. Earth
15.
16.
17. Video-outlet earth
18. Video-inlet earth
19. Composite video outlet
20. Composite video inlet/
21. Socket earth

Note 2 : By means of scart socket from the external device supporting NTSC system you can obtain image in the position of AV1 or AV2. In this case **"TINT"** feature will be added on the picture menu.

On this feature, you can make the colour adjustment you want by using **"VOL▶"/"VOL◀"** keys on your command.

TV, Video and satellite receiver connections
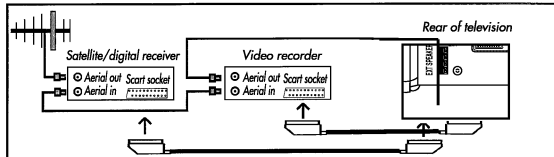
Note 1 : In case you connect Decoder to your TV from the Scart1 inlet and connect Video, DVD or VCD from Scart2 inlet and work at the same time, with the broadcast coming by means of Decoder to encoded state while watching broadcast in AV2 position your television will automatically pass from AV2 position to AV1 position.
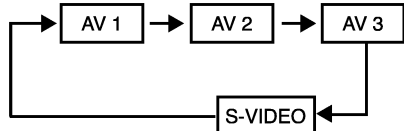
Note : Use programme keys to get out of AV cycle.

Note 3 :
You can record the device you connected from AV1, AV3 and S-VIDEO inlet to an external record device you will connect to the AV 2 socket of your TV. See the section for outlet to AV2 under the heading of other features.

Note 4 :
In case of entry of MONO sound from scarts (L or left sound entry), bring the sound type to DUAL 1 position to hear the sound from both speakers.
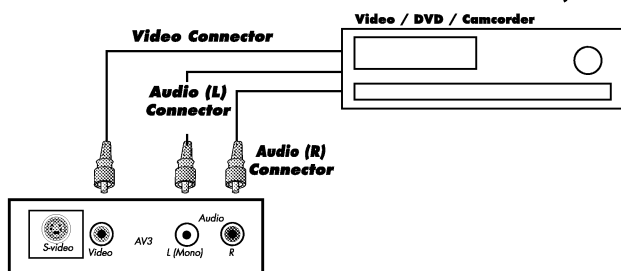
Note 5 :
Devices which automatically pass to AV, also determine the screen mode to become 4:3 or 16:9.
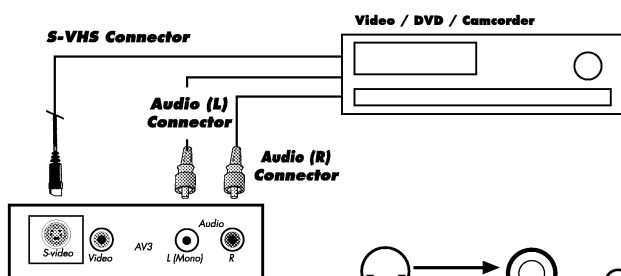
Note 6 :
Connection cables are not given together with the television.

External device connection from AV terminals (AV3)

You can connect your devices like video, DVD player, camera from RCA type connector inlets of your television. In this case, bring your television to "AV3" position by pressing the "AV" key on the remote control.

Connection of device with S-VHS connector (AV3-S) Left (R) - sound entry CINCH connector - Left (L) "MONO inlet" - S-VHS connector - S-VHS Video/Camera You can connect your devices like video-player or camera which have S-VHS feature to your television as on the left. In this case bring the television to "S-VIDEO" position by pressing the "AV" key. You can watch your video cassette in S-VHS format on your television in clear picture quality with a video of S-VHS feature.

Connection of device with S-VHS connector (AV3-S)

Headphone connection (optional)
Connect a headphone with a headphone socket, which has an impedance of between 8 and 600 Ohm and is of the 3,5 mm jack type. Insert the plug into the headphone socket. In the Sound menu select Headphone to adjust the sound adjusments for headphone.

External loudspeakers (optional)
You can replace the left and right internal loudspeakers of your set by two extra loudspeakers, 8 Ohm each. Connect the loudspeakers to the connector clips at the back of the TV. Push the connector clip down and insert the ends of the wires into the openings: the negative wires to the black connector clips, the positive wires (the one with a black line) to the red connector clips. Do not insert the wires too far. Connect the front left loudspeaker to L and the front right loudspeaker to R. Put the loudspeaker switch on the back in the EXT position. The internal right and left loudspeakers of your TV are now switched off.

4
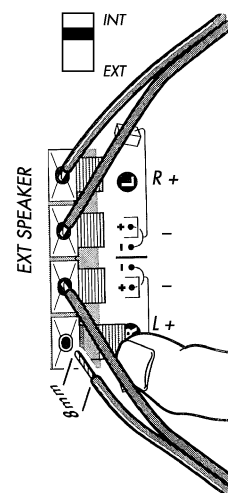
Using your television
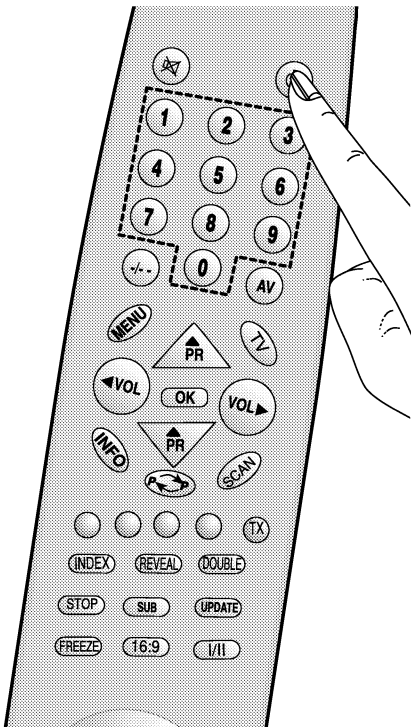
Temporary switch-off (STAND-BY)

When you press the red "STAND-BY (Temporary switch-off)" key on the right upper side of your remote control device, while your TV is in working condition, the image and sound of your television will be cut off. In order to turn on your television again, press any number key or **" PR▼"/"PR▲"** keys.

Attention!
If you are not going to use your television for a long time, turn off from on-off (network) key. When you use your television continually with the "temporary switch-off" key, the process of cleansing magnetic area does not realise. For this reason colouring may arise on the screen. In this case switch off your television from the on-off (network) key. Turn on your television again after it cools down.

Temporary sound interruption

1 When you want to interrupt the sound of your television for a temporary period, press **"MUTE"** key.

2 In this case the sign " ⊠ " will appear.

3 When you press the same key for the second time, the sound will be opened again.
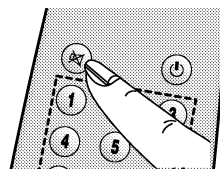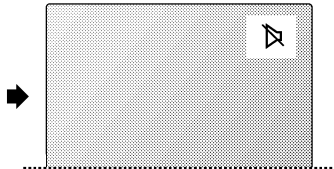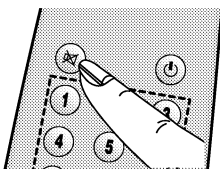
For information: While on mute position, volume decreases when you press **"◄VOL"** key, when you press **"VOL►"** key, Mute position cancels.

Display key
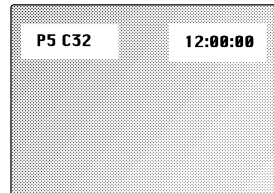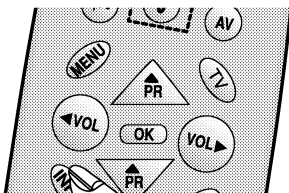
When you press **"INFO"** key, the number of programme you have been watching and the name of the programme (if the name of the programme is not given, the channel number) will appear on the top left corner of the screen and the time will appear on the right top corner if the broadcast you have been watching is with teletext. After a short while, the image is automatically deleted. When pressed for the second time, programme schedule appears on the screen.

P5 C32   12:00:00

SWAP key
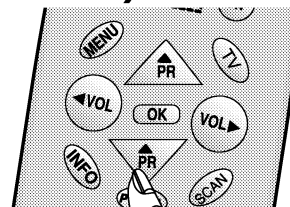
When you press **"P⇄P"** key, whichever programme you watched before the one you are currently watching, it comes to the screen. When you press this button again, the programme you were watching previously comes to the screen.

Broadcast tuning and recording to memory
- With the ATS (Automatic Tuning System) feature of your television, you can automatically search for TV broadcasts, find and record to the memory. Or you can enter channel numbers, thus find the broadcasts.

A. Automatic search of TV channels and recording to memory
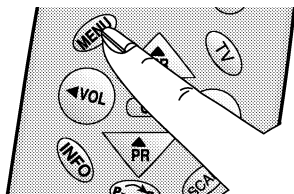
Bring the menu to the screen by pressing the **"MENU"** key on the remote control.
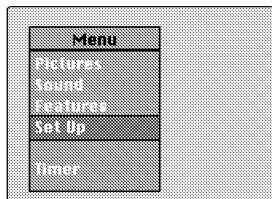
1 Then press **"PR▼"** key, make channel tuning line blue. Press **"VOL►"** key. Channel tuning menu will come to the screen.
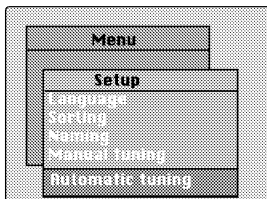
2 By pressing the **"PR▼"** key, turning the automatic tuning line into blue, press **"VOL►"** key. Automatic channel tuning menu will come to the screen. By using **"VOL►/VOL◄"** keys, choosing Turkey against country, press **"OK"** key.
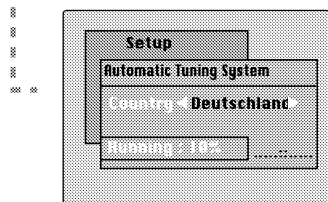
3 Channels will automatically scanned and channels on which broadcast is found will be started to be taken into memory from the First programme. At that moment it will display completed channels on the screen as percentage. When the process is completed Channel Tuning menu is deleted. In order to stop the process at any moment, press **"TV"** key. You can record programme numbers taken into memory, any channel you want as stated in Programme Listing section. For those required to be fine tuned among those taken into memory, tune as told in Fine Tuning section and record to the memory. In order to cancel those unnecessary due to frequency pollution (especially in areas where Tv receivers are intense), see Programme delete section.

B. Searching and recording of TV channels into memory
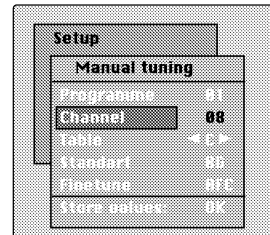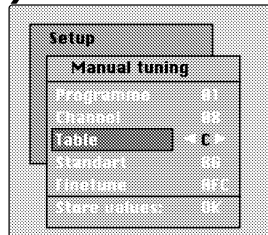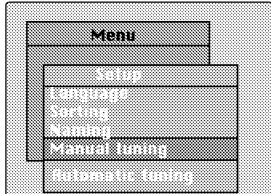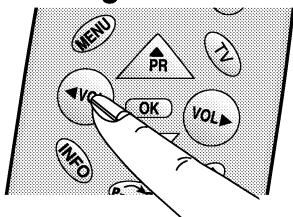
Press the **"MENU"** key on your remote control. By using "PR" key turn the channel tuning keys into blue. Bring the Channel tuning menu on your screen by pressing **"VOL►"**.
By using **"PR▼"** key, making the Manual tuning line to blue, pressing the **"VOL►"** key, bring the Manual tuning menu on your screen.

A. if you know channel numbers:
Enter the channel number by using numbering keys.

B. if you don't know the channel number:
Scan the channel numbers in an increasing order by pressing **"VOL►"** on your remote control, in a decreasing order by pressing **"VOL►"**. When you meet the number of broadcast receiving channel the image will appear on the screen. If the broadcast on the screen is not in the desired quality, continue searching for channel.

With the **"PR▼"/"PR▲"** keys of your remote control, make Channel type line into blue. With the **"VOL►"** key choose "S" for cable channels, **"C"** for the broadcast received from antenna. Again proceed to Channel No. key with the **"PR▼"** key.
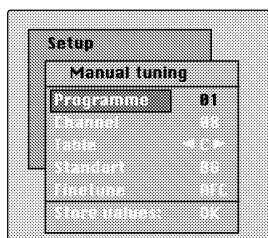
Recording to the memory:
After finding the desired station, make the Programme line blue with the **"PR▼"** key. By using the numbering keys, enter the programme number which you want to take your current channel into memory. You can also select the programme number by using **"VOL►/VOL◄"** keys.
After having selected the programme number press **"OK"** key. When the letters on the record to memory line turn into yellow in an order and then again become white, the broadcast will be taken into memory with the programme number you have chosen.
You can record other channels as well into memory by searching in the same way. If you would like to exit Channel tuning menu for some reason, press **"TV"** key.

Fine Tuning
If the current channel requires fine tuning make the Fine Tuning line blue by entering the Manual tuning menu from the Channel Tuning menu using **"PR▼ "** key. By using the **"VOL▶"/"VOL◀"** keys on your command, adjust the broadcast seen on the screen to the desired quality. Under normal conditions you will not require fine tuning. **(OFK** is running.) AFC circuits of your television will be locked to the desired station. However in case TV transmitters do not function in the standards, you may require that. When you make fine tuning AFC will get out of circuit. The operation to take the tuning you have made to memory is as above.

Programme Schedule
Deletion/replacement of broadcast taken into memory:
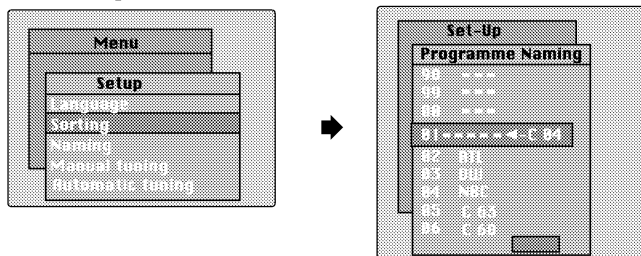
By entering the channel Tuning sub-menu from the Menu, make the Programme listing line in blue colour. Press **"VOL▶"** key, enter Features menu.

Move towards the programme number you want to delete with the **"PR▼ "/"PR▲ "** keys. After the programme you have selected comes to the screen, press the **"VOL▶"** key. Delete and Red signs will appear in the lower part of the screen.

Deletion:
If you press the red key on the remote control, the channel on the selected programme will be deleted and the channels taken into memory in the following programmes will pass onto previous programme numbers.

Replacement:
Choose the channel taken into memory in the programme you have chosen by using "PR"/ "PR" keys. Press "VOL" key, bring the desired programme number opposite to it with "PR"/ "PR" keys.
Press "VOL" key. The broadcast is transferred to the desired programme number. Channels taken into memory in the following programmes will pass into the following programme number.

Naming of programmes:
You can name the programme or programmes you want in five characters. By entering Channel Tuning sub menu from the menu, make the naming line in blue colour with the "PR" key. Press "VOL" key, enter Features menu.
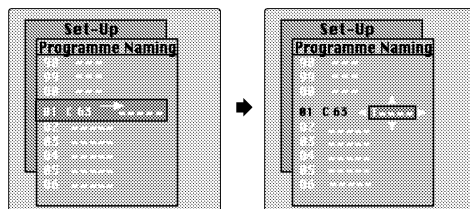
Select the programme you want to name or change the given name with **"PR▼ "/"PR▲ "** keys. Press **"VOL▶"** key.

Select the letter or number by using "PR" and "PR" keys. In order to move to the following/previous digit, use **"VOL▶"/"VOL◀"** keys. After having entered all the characters, record the name you have written into memory by pressing the **"OK"** key.
Repeat the above procedures to write name in other programmes. IF you want to exit the menu before finishing the process for some reason, press **"MENU"** key.
Note: If no name is given to the programme channel number of 0 programme will be written automatically.

Volume tuning
You can make volume level tuning by using **"VOL▶"/"VOL◀"** keys on your command when there is no menu on the screen or by using **" ▶▲◀"** keys on the front panel of your Tv.
Press **"MENU"** key. Make the volume line blue with the "PR" key, press **"VOL▶"** key. Volume tuning menu will come to the screen.

Balance adjustment: In order to adjust the volume balance between the left and right earphones, make the Balance line blue by using **"PR▼ "** key. Make the balance adjustment by using **"VOL▶"/"VOL◀"** keys.

Subwoofer: (For the TVs with this feature). In order to tune the subwoofer speaker volume level make the Subwoofer line blue by using **"PR▼ "**key. Make level adjustment by using **"VOL▶"/"VOL◀"** keys.

Virtual Dolby: (For the TVs with this feature). DVD or video cassette recorded with Virtual Dolby, Dolby Pro Logic Sound System enables you to listen with two speakers under the influence of Dolby Pro Logic.
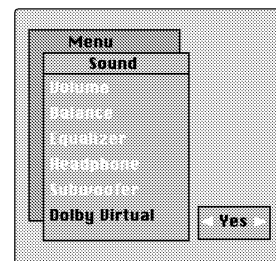
Manufactured under license from Dolby Laboratories.
® " Dolby " and the double-D symbol are trademarks of Dolby Laboratories.
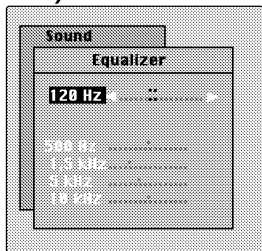
Equalizer: Make the Equalizer line blue, press **"VOL▶"** key.
Equalizer menu will appear on the screen. Choose the frequency band you want to tune with the **"PR▼ "/"PR▲ "** keys. Adjust the chosen frequency level with the keys of **"VOL▶"/"VOL◀"**. Tuning levels are automatically taken into the memory.
Note: If this feature is chosen in TVs with virtual Dolby feature, Equalizer menu can not be entered.
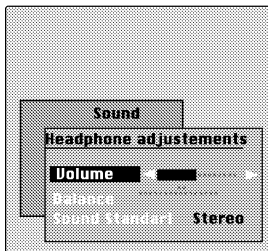
Headphone: Make the headphone line blue, press **"VOL▶"** key. headphone tuning menu will appear on the screen. You can use the functions here when you insert headphone in the properties suitable with the headphone outlet of your TV. You can make tuning selection with **"PR▼ "/"PR▲ "** keys, adjust the level with the **"VOL▶"/"VOL◀"** keys. IF the broadcast you watch in the sound standard is stereo you can listen by selecting mono/stereo, is it is in two different languages you can listen with Dual I / Dual II selection.

NOTE: Your television has the feature to receive Analogue stereo (A2) broadcast.
If the broadcast you have been watching is stereo the STEREO sign will appear on the screen.
If the stereo broadcasting is bad or you want to listen as mono, press the **"I/II"** key on the remote control. Organisations making stereo broadcast can make broadcasting in tow different languages instead of stereo. (DUAL I/II feature). In such broadcasts, you can listen to one of these languages as mono from both speakers. To choose language, press **"I/II"** key on remote control.

Image tuning

Press **"MENU"** key, then **"VOL▶"** key when the Picture line is blue. Picture tuning menu will appear on the screen. You can make tuning selection by using **"PR▼"/"PR▲"** keys, adjust levels with **"VOL▶"/"VOL◀"** keys. You can change picture brightness, colour intensity, contrast and sharpness levels depending on your choice. Besides, with the help of noise reduction feature of your Tv you can decrease picture failures to arise for various reasons under options depending on its strength.

Other features:

Press **"MENU"** key then **"VOL▶"** key when Features line is blue. Features tuning menu will appear on the screen.

Child lock

If you want to activate Child lock by pressing **"VOL▶"** key choose Yes position. In this case your television will not be worked from the keys on the front panel. It can only be worked with remote control. If you want to cancel child lock, choose No position.

Automatic volume control (AVC)

Sound qualities and levels of broadcasting institutions are different. This is felt when volume level in once channel is high and low in the other during programme transitions or when advertisement broadcast starts.
If you want to activate AVC by pressing **"VOL▶"** key, choose Yes position.
Since activating AVC effects the sound quality in film and music broadcasts, Yes position is not taken into memory.

Outlet to AV2

You can choose the exit to the second socket in the rear of your television. The ease of utilisation of this is to be able to record to a device you will connect to a second Start from a different inlet while watching broadcast from a different inlet or the ability to send picture and sound information.
TV television broadcast.
Picture and sound information coming from the device connected from AV1 first scart.
Picture coming from the device connected from AV3 inlet and sound information connected from CINCH connectors. (for TVs with AV3 inlet) Picture coming from the device connected from S-Video S-VHS inlet sound information connected from CINCH Connectors.

Picture format (Optioal)

16:9 The set will automatically switch over to the 16:9 format when it detects a 16:9 format from scart inputs. However, you can also switch the format yourself.
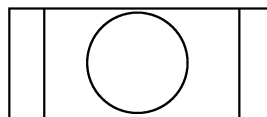
4:3 Conventional 4:3 picture format. It can be enlarged by selecting 16:9 format.
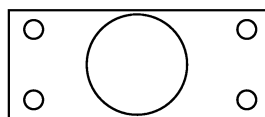
Letter Box This mode is
usefull when watching video
Clips, some film formats and Pal-Plus Format. If you can't see the subtitle supplied by an external appliance at the bottom of the screen, especially when watching 4:3 picture in Letter Box format, press MIX button.

Menu language
Press **"MENU"** key. Make the Language line blue with the **"PR▼"** key, press **"VOL▶"** key. Language selection menu will appear on the screen. You can choose one of the languages of English, German, French, Turkish, Spanish, Italian, Swedish, Flemmish by using **"PR▼"/"PR▲"** keys.

Automatic switch off-on
You can switch off your television automatically in the end of the period you will give, and again switch on automatically in the end of the period you will give. Press **"MENU"** key. Make the Timer line blue with the "PR" key, press **"VOL▶"** key. Timer menu will appear on the screen. Periods are given in hours and minutes. If the period you will give is less than an hour, make the time entry OO. For automatic switch-off choose Automatic switch-off from Timer menu. Enter the hour and minute by using the numbering keys of remote control, exit menu. To see the remaining period at any time, enter this menu. For automatic switch-on choose Automatic switch-on from the Timer menu. The procedure to be made is as told in automatic switch-off.
To cancel the entered period, press the Red key on remote control.

Note: If you switch off your television from the network key, the periods you have given for automatic on-off will be cancelled.

Picture format
Press **"16:9"** key on remote control. Picture Format menu will appear on the screen. You can choose the format you want with the **"VOL▶"** key.
In Normal the picture format of your television is 4:3.
Narrow is for viewing in 16:9 format.
Long is for placing the picture within screen framework in case of receiving 4:3 broadcast in Letter-box format.
Note: When programme is changed, picture format becomes Normal (4:3).

Timer
Switch-Off Timer
TV set switches off in
01 hours and 15 minutes
Clear Timer
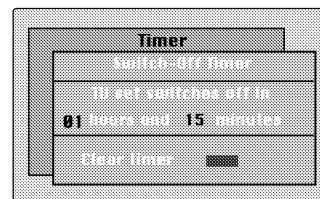
Picture freeze
When you press **"FREEZE"** key on your remote control, the picture on the screen becomes fixed. To get out of the position, press the same key again.

Picture scan
You can watch the first four or sixteen programmes from the programme you have been watching, on the screen within frames. Press **"SCAN"** key on your command for this. The programme you are watching and the following three programmes will be scanned in intervals on the screen in four different frames. To view the desired one from these programmes, press **"SCAN"**, **"TV"** or **"OK"** during scanning. The programme you chose will appear on the screen. By pressing **"PR▼"** key during scanning, you can make the number of scanned programs sixteen. To exit, press **"SCAN"** key.
Note: In widescreen TVs only twelve scanning is made.

Viewing desired programme
When you press the **"INFO"** key on your remote control twice consecutively, bring the Info headed programme schedule to the screen. When you move onto the programme you are willing to watch with the keys of **"PR▼"/"PR▲"**, the image of that programme will appear on the screen. To delete the schedule from the screen, press **"INFO"** or **"TV"** key.

Special Teletext Functions
P100 (Index / info key)
To select the index page, press this key.

Sub page key (SUB)
In case the teletext broadcasting institute broadcasts the sub pages of an teletext page, you can move to sub pages by using **"SUB"** key. In this case, **"P****/*****"** is seen on the lowest line. Enter the number of the sub page you want by using the numbering keys. You can exit the sub page by pressing the same key again.

Page enlargement key (DOUB)
You can view the upper half of the teletext page by using this key. Press the same key again to see the lower part of the same page as enlarged. When you press the **"DOUB"** key for the third time page will return to its normal size.

Question reply key (REV)
Sometimes a teletext page includes a hidden reply like a game or puzzle. To disclose the hidden reply, press **"REV"** key.

Stop key (STOP)
Some information are arranged as more than one page by the publishing institution, published as automatically converted. For example, in a letter comprised of four pages, pages are displayed on the screen as 1/4, 2/4, 3/4, 4/4. To look at one of these pages for longer press **"STOP"** key. When you press the same key again, it continues.

Teletext display key on TV picture (MIX)

By pressing **"TX"** key, you can view teletext information and TV broadcast on each other and together. Thus, you can follow the teletext broadcast of that channel while on TV broadcast. To return to teletext broadcast, press **"TX"** again, to return to TV broadcast pres **"TV"** key.

Temporary TV display key (UPDATE)

It is for you to wait for the searching of the page by passing on to the television display when the page you want is searched on teletext broadcast. While searching for the page for which you want teletext, you can change to television display by pressing **"UPDATE"** key. When the desired page is found, the number of that page appears on the screen.

Fastext position

Coloured keys on remote control device are for fastext feature. When you choose any page, headings on various subjects could have been written in four different colours or in coloured frames (red, green, yellow and blue). By pressing the key for the related colour on remote control device, you can reach the desired subject without waiting.

Note: Fastext feature is not available in all teletext broadcasts. Whether it will be published or not is determined by the institution making the broadcast.

SERVICE TIPS
BEFORE CALLING FOR SERVICE
HAVE YOU CHECKED (√) THE
FOLLOWING CHERT ON SYMPTOMS
AND SOLUTIONS?

Symptoms	Check if on/off switch is "on"	Try a different channel, if OK, probably station trouble	Check aerial connections on back of set	Check aerial for broken wires	Re orientate aerial	Probably local interference, such as an appliance	Adjust fine tuning control	Adjust brightness control	Adjust contrast control	Check if station is broadcasting colour	Adjust colour control	Check batteries in the remote control handset.	Switch the TV set OFF and ON from mains
No picture, no sound	✓	✓	✓	✓		✓							
Poor sound, picture OK		✓			✓	✓							
Poor Picture, sound OK		✓	✓	✓	✓	✓	✓						
Weak picture		✓	✓	✓	✓	✓							
Blurred picture		✓		✓	✓	✓							
Double image		✓	✓	✓	✓	✓							
Lines in picture		✓		✓	✓	✓	✓						
Distorted picture		✓		✓	✓	✓							
Weak reception on some channels		✓	✓	✓	✓	✓	✓						
Horizontal bars					✓	✓	✓						
Picture rolls vertically		✓			✓	✓	✓						
Poor colour		✓	✓	✓	✓	✓	✓	✓	✓		✓		
No colour	✓	✓	✓	✓		✓			✓	✓			
Remote control not working												✓	✓
TV does not accept any command													✓
Teletext rolling up/down													✓

VIDEO BLOCK DIAGRAM

IF Module
IC 101
TDA 9810
Pin no:12

CVBS - Tuner

scart 1   cvbs 1
           cvbs out

scart 2
           cvbs 2   IC 702   CVBS   Feature box   ►R
                                                             ►G   OUT
           cvbs out   ►B

           cvbs3

                                              CVBS - text
                                              Mikroprocessor Module

STEREO-SCART MODULE

AUDIO BLOCK DIAGRAM

STEREO SCART MODULE

R - çıkış

Audio Out   Internal   Speaker
(Amplifier)   External   socket   L1 - in
            L - çıkış   Speaker   R1 - in
                          Switch
            R-Pre Amp Out   L - out

                                          MSD   R - out

                                          3410D   L2 - in
Subwoofer Out   L-Pre Amp Out   R2 - in
(Amplifier)   L2 -çık
                          Subwoofer   in   R -çık
                            R-Headphone
Headphone out   AV3
(Amplifier)   L -Headphone   audio L

                                                                AV3
                                                                audio R

                                               QSS (IF)

                          IF Modüle
                          IC 101 TDA 9810
                          Pin:10

11

TDA 16846   Controller For Switch Mode Power Supplies

Description

TheTDA16846 is optimized to control free running or fixed frequency flyback converters with or with-out Power Factor Correction (Current Pump). To provide low power consumption at light loads, this device reduces the switching frequency continuously with load, towards an adjustable minimum (e.g. 20kHz in standby mode). Additionally, the start up current is very low. To avoid switching stresses of the power devices, the power transistor is always switched on at minimum voltage. A special circuit is implemented to avoid jitter. The device has several protection functions: VCC over- and undervoltage, mains undervoltage, current limiting and 2 free usable fault comparators. Regulation can be done by using the internal error amplifier or an opto coupler feedback (additional input). The out-put driver is ideally suited for driving a power MOSFET, but it can also be used for a bipolar transistor. Fixed frequency and synchronized operation are also possible.

```
OTC  ▉ 1        14 ▉  VCC
PCS  ▉ 2        13 ▉  OUT
RZI  ▉ 3        12 ▉  GND
SRC  ▉ 4        11 ▉  PVC
OCI  ▉ 5        10 ▉  FC1
FC2  ▉ 6         9 ▉  REF
SYN  ▉ 7         8 ▉  N.C.
```
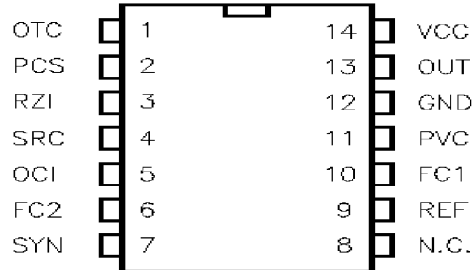
Pin Description

Pin	Symbol	Function
1	OTC	Off Time Circuit
2	PCS	Primary Current Simulation
3	RZI	Regulation and Zero Crossing Input
4	SRC	Soft-Start and Regulation Capacitor
5	OCI	Opto Coupler Input
6	FC2	Fault Comparator 2
7	SYN	Synchronization Input
8		N. C.
9	REF	Reference Voltage and Current
10	FC1	Fault Comparator 1
11	PVC	Primary Voltage Check
12	GND	Ground
13	OUT	Output
14	VCC	Supply Voltage

Absolute maximum ratings

Parameter	Symbol	Min	Max	Unit	Remark
Supply Voltage at Pin 14	V_{CC}	-0.3	17	V	
Voltage at Pin 1, 4, 5, 6, 7, 9, 10		-0.3	6	V	
Voltage at Pin 2, 8, 11		-0.3	17	V	
Voltage at Pin 3 Current into Pin 3	RZI	-10	6	V mA	$V3 < -0.3V$
Current into Pin 9	REF	-1		mA	
Current into Pin 13	OUT	-100	100	mA mA	$V13 > V_{CC}$ $V13 < 0 V$
ESD Protection				kV	MIL STD 883C method 3015.6, 100pF,1500Ω
Operating Ambient Temperature	T_A	0	70	°C	
Storage Temperature	T_{stg}	-65	125	°C	
Operating Junction Temperature	T_J		125	°C	
Thermal Resistance Junction-Ambient	R_{thJA}			K/W	P-DIP-14-3
Soldering Temperature			260	°C	
Soldering Time			10	s	

All voltages listed are referenced to ground (0V, V_{SS}) except where noted.

STV9379FA

Vertical Deflection Booster

- POWER AMPLIFIER
- THERMAL PROTECTION
- OUTPUT CURRENT UP TO 2.6A_{PP}
- FLYBACK VOLTAGE UP TO 90V (on Pin 5)
- SUITABLE FOR DC COUPLING APPLICATION
- EXTERNAL FLYBACK SUPPLY

PIN CONNECTIONS

1 — Inverting Input
2 — Supply Voltage
3 — Flyback Supply
4 — GND or Negative Supply
5 — Output
6 — Output Stage Supply
7 — Non-inverting Input

DESCRIPTION

Designed for monitors and high performance TVs, the STV9379FA vertical deflection booster can handle flyback voltage up to 90V. Further to this, it is possible to have a flyback voltage which is more than the double of the supply (Pin 2). This allows to decrease the power consumption, or to decrease the flyback time for a given supply voltage.

The STV9379FA operates with supplies up to 42V and provides up to 2.6A_{PP} output current to drive the yoke.

The STV9379FA is offered in HEPTAWATT package.

BLOCK DIAGRAM

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TDA9810

Multistandard VIF-PLL with QSS-IF and AM demodulator
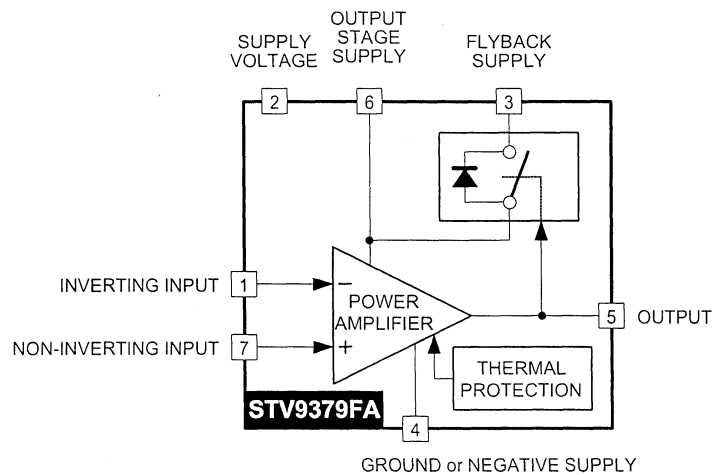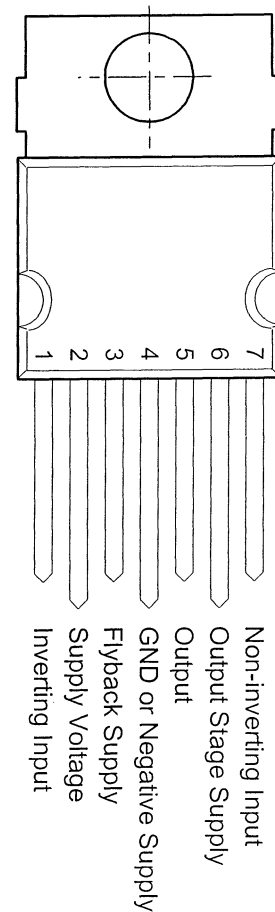
FEATURES

- 5 V supply voltage
- Gain controlled wide band Video Intermediate Frequency (VIF)-amplifier (AC-coupled)
- True synchronous demodulation with active carrier regeneration (very linear demodulation, good intermodulation figures, reduced harmonics, excellent pulse response)
- Gated phase detector for L/L accent standard; robustness for over-modulation until 105%
- Voltage Controlled Oscillator (VCO) frequency switchable between L and L accent (alignment external) picture carrier frequency
- Separate video amplifier for sound trap buffering with high video bandwidth
- VIF Automatic Gain Control (AGC) detector for gain control, operating as peak sync detector for B/G (optional external AGC) and peak white detector for L; signal controlled reaction time for L

- Tuner AGC with adjustable TakeOver Point (TOP)
- AFC detector without extra reference circuit
- SIF-input for single reference Quasi Split Sound (QSS) mode (Phase Locked Loop (PLL) controlled); Sound Intermediate Frequency (SIF) AGC detector for gain controlled SIF amplifier; single reference QSS mixer able to operate in high performance single reference QSS mode
- AM demodulator without extra reference circuit
- AM mute (especially for NICAM)
- Stabilizer circuit for ripple rejection and to achieve constant output signals.

GENERAL DESCRIPTION

The TDA9810 is an integrated circuit for multistandard vision IF signal processing and sound AM demodulation, with single reference QSS-IF in TV and VCR sets.

BLOCK DIAGRAM
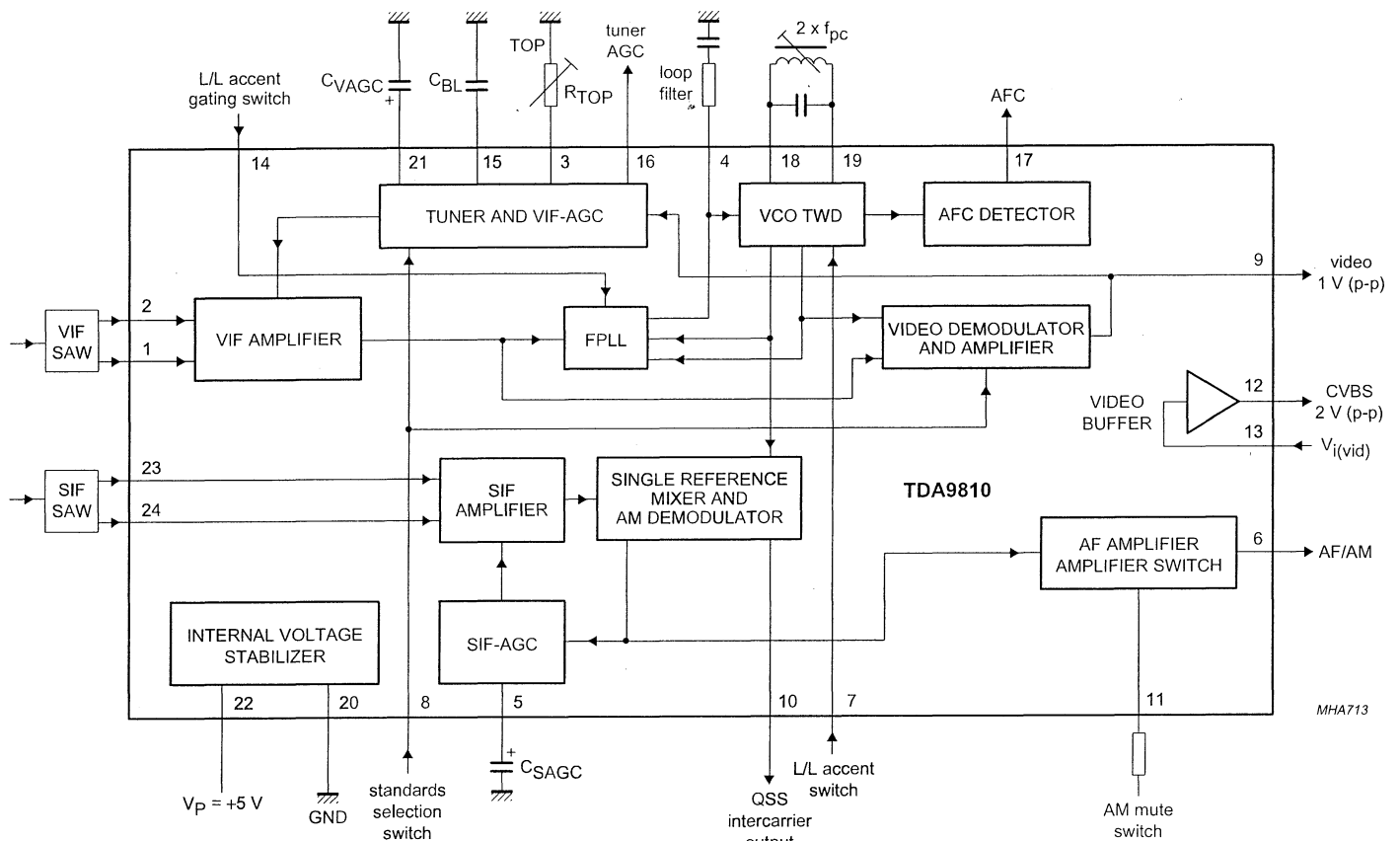
TDA9810

SYMBOL	PIN	DESCRIPTION
$V_{i\,VIF1}$	1	VIF differential input signal voltage 1
$V_{i\,VIF2}$	2	VIF differential input signal voltage 2
TADJ	3	tuner AGC takeover point adjust
T_{PLL}	4	PLL loop filter
C_{SAGC}	5	SIF AGC capacitor
$V_{o\,AF}$	6	AM audio frequency output voltage
LSWI	7	L/L accent switch
STD	8	standard switch
$V_{o(vid)}$	9	composite video output voltage
$V_{o\,QSS}$	10	single reference QSS output voltage
MUTE	11	AM mute switch
$V_{o\,CVBS}$	12	CVBS output signal voltage

SYMBOL	PIN	DESCRIPTION
$V_{i(vid)}$	13	video buffer input voltage
LGATSWI	14	L/L accent gating switch
C_{BL}	15	black level detector
TAGC	16	tuner AGC output
AFC	17	AFC output
VCO1	18	VCO1 reference circuit for $2f_{SC}$
VCO2	19	VCO2 reference circuit for $2f_{SC}$
GND	20	ground
C_{VAGC}	21	VIF AGC capacitor
V_P	22	supply voltage
$V_{i\,SIF1}$	23	SIF differential input signal voltage 1
$V_{i\,SIF2}$	24	SIF differential input signal voltage 2

MHA712

16
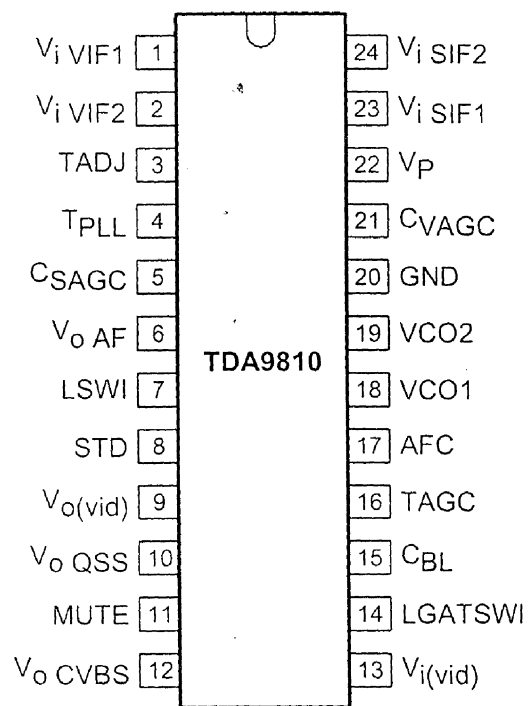
FEATURE BOX MODULE BLOCK DIAGRAM

VPC 3230 D
- PAL/SECAM Decoder
- Analog/Digital convertor

Chroma
CVBS
Scart RGB
Text - CVBS

Y(8 bit)
U(4)
V(4)

S DA 9401
- 100 Hz Process
- Noise reduction
- Picture freezing

H - Sync
V - Sync

V(4)
U(4)
Y(8)

DDP 3310 D
- Digital/Analog convertor
- RGB procces
- Deflection procces
- RGB out

Horizontal
V - Pro.
Cut - Off
OSD - RGB

V Sync
H Sync
EW out
Vertical out
Horizontal out
RGB out

IC802 L49CV33
3.3 V voltage
Regülatörü

IC805 TL7705
RESET IC

+ 5 V.

R E S E T

VPC323XD

Comb Filter Video Processor

Introduction

The VPC 323xD/324xD is a high-quality, single-chip video front-end, which is targeted for 4:3 and 16:9, 50/60 and 100/120 Hz TV sets. It can be combined with other members of the DIGIT3000 IC family (such as DDP 33x0A/B, TPU 3040) and/or it can be used with 3rd-party products.

The main features of the VPC 323xD/324xD are

- high-performance adaptive 4H comb filter Y/C separator with adjustable vertical peaking

- multi-standard color decoder PAL/NTSC/SECAM including all substandards

- four CVBS, one S-VHS input, one CVBS output

- two RGB/YC$_r$C$_b$ component inputs, one Fast Blank (FB) input

- integrated high-quality A/D converters and associated clamp and AGC circuits

- multi-standard sync processing

- linear horizontal scaling (0.25 ... 4), as well as non-linear horizontal scaling 'panorama vision'

- PAL+ preprocessing (VPC 323xD)

- line-locked clock, data and sync, or 656-output interface (VPC 323xD)

- display and deflection control (VPC 324xD)

- peaking, contrast, brightness, color saturation and tint for RGB/YC$_r$C$_b$ and CVBS/S-VHS

- high-quality soft mixer controlled by Fast Blank

- PIP processing for four picture sizes ($\frac{1}{4}$, $\frac{1}{9}$, $\frac{1}{16}$ or $\frac{1}{36}$ of normal size) with 8 bit resolution

- 15 predefined PIP display configurations and expert mode (fully programmable)

- control interface for external field memory

- I^{2}C-Bus Interface

- one 20.25 MHz crystal, few external components

- 80-pin PQFP package

Pin Configuration

VPC323XD

Left side (pins 65-80):
- GNDF 65
- VRT 66
- I2CSEL 67
- ISGND 68
- VSUPF 69
- VOUT 70
- CIN 71
- VIN1 72
- VIN2 73
- VIN3 74
- VIN4 75
- VSUPAI 76
- GNDAI 77
- VREF 78
- FB1IN 79
- AISGND 80

Right side (pins 25-40):
- 40 Y0
- 39 Y1
- 38 Y2
- 37 Y3
- 36 VSUPY
- 35 GNDY
- 34 Y4
- 33 Y5
- 32 Y6
- 31 Y7
- 30 GNDLLC
- 29 VSUPLLC
- 28 LLC1
- 27 LLC2
- 26 VSUPPA
- 25 GNDPA

Top side (pins 41-64):
- INTLC
- VSUPSY
- AVO
- GNDSY
- FSY/HC
- C0
- MSY/HS
- C1
- VS
- C2
- FPDAT
- C3
- VSTBY
- GNDC
- CLK5
- VSUPC
- NC
- C4
- XTAL1
- C5
- XTAL2
- C6
- ASGF
- C7

Bottom side (pins 1-24):
- B1/CB1IN
- CLK20
- G1/Y1IN
- FFOE
- R1/CR1IN
- FFRE
- B2/CB2IN
- FFRSTW
- G2/Y2IN
- FFWE
- R2/CR2IN
- FFIE
- ASGF
- YCOEQ
- NC
- VGAV
- VSUPCAP
- TEST
- VSUPD
- RESQ
- GNDD
- SDA
- GNDCAP
- SCL

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DDP 3310B

Display and Deflection Processor

Introduction

The DDP 3310B is a single-chip digital Display and Deflection Processor designed for high-quality back-end applications in 100/120-Hz TV sets with 4:3- or 16:9 picture tubes. The IC can be combined with members of the DIGIT 3000 IC family (VPC 32xx, TPU 3040), or it can be used with third-party products. The IC contains the entire digital video component and deflection processing and all analog interface components.

Main Features

Video processing

- linear horizontal scaling (0.25 ... 4)

- non-linear horizontal scaling "panoramavision"

- dynamic peaking

- soft limiter (gamma correction)

- color transient improvement

- programmable RGB matrix

- picture frame generator

- two analog RGB/Fast-Blank inputs

Deflection processing

- scan velocity modulation output

- high-performance H/V deflection

- EHT compensation for vertical / East/West

- soft start/stop of H-Drive

- vertical angle and bow

- differential vertical output

- vertical zoom via deflection

- horizontal and vertical protection circuit

- adjustable horizontal frequency for VGA/SVGA display

Miscellaneous

- selectable 4:1:1/4:2:2 YC_rC_b input

- selectable 27/32-MHz line-locked clock input

- crystal oscillator for horizontal protection

- automatic picture tube adjustment (cutoff, white-drive)

- single 5-V power supply

- hardware for simple 50/60-Hz to 100/120-Hz conversion (display frequency doubling)

- two I^2C-controlled PWM outputs

- beam current limiter

21
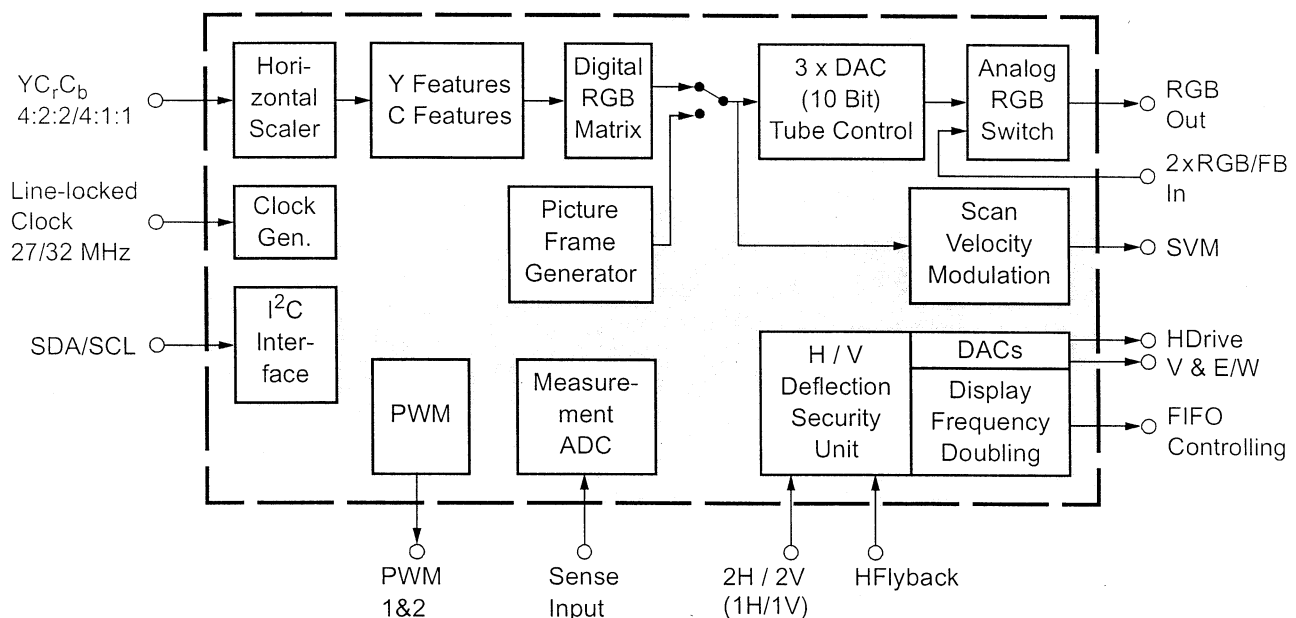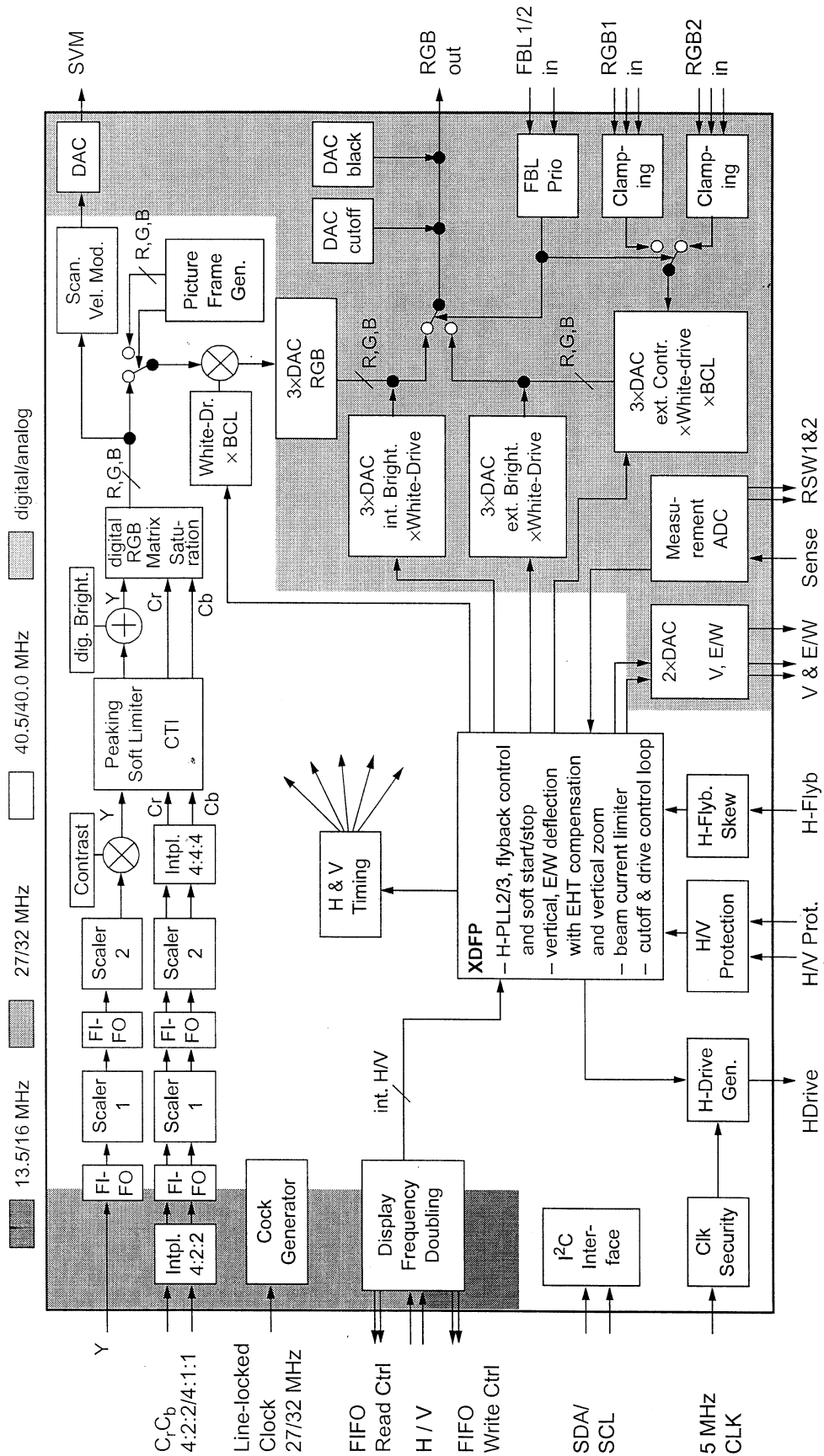
SDA 9401

General description

The SDA 9401 is pin compatible to the SDA 9400 (frame memory embedded).
The SDA 9401 comprises all main functionalities of a digital featurebox in one monolithic IC.

The SDA 9401 does a simple 100/120 Hz interlaced (50/60 Hz progressive) scan rate conversion. The scan rate converted picture can be vertically expanded. The SDA 9401 has a freerunning mode, therefore features like multiple picture display (e.g. tuner scan) are possible.

The noise reduction is field based. Furthermore separate motion detectors for luminance and chrominance have been implemented. For automatic controlling of the noise reduction parameters a noise measurement algorithm is included, which measures the noise level in the picture or in the blanking period. In addition a spatial noise reduction is implemented, which reduces the noise even in the case of motion. The input signal can be compressed horizontally and vertically with a certain number of factors. Therefore split screen modes are supported too.

Beside these additional functions like coloured background, windowing and flashing are implemented.

Block diagram

22
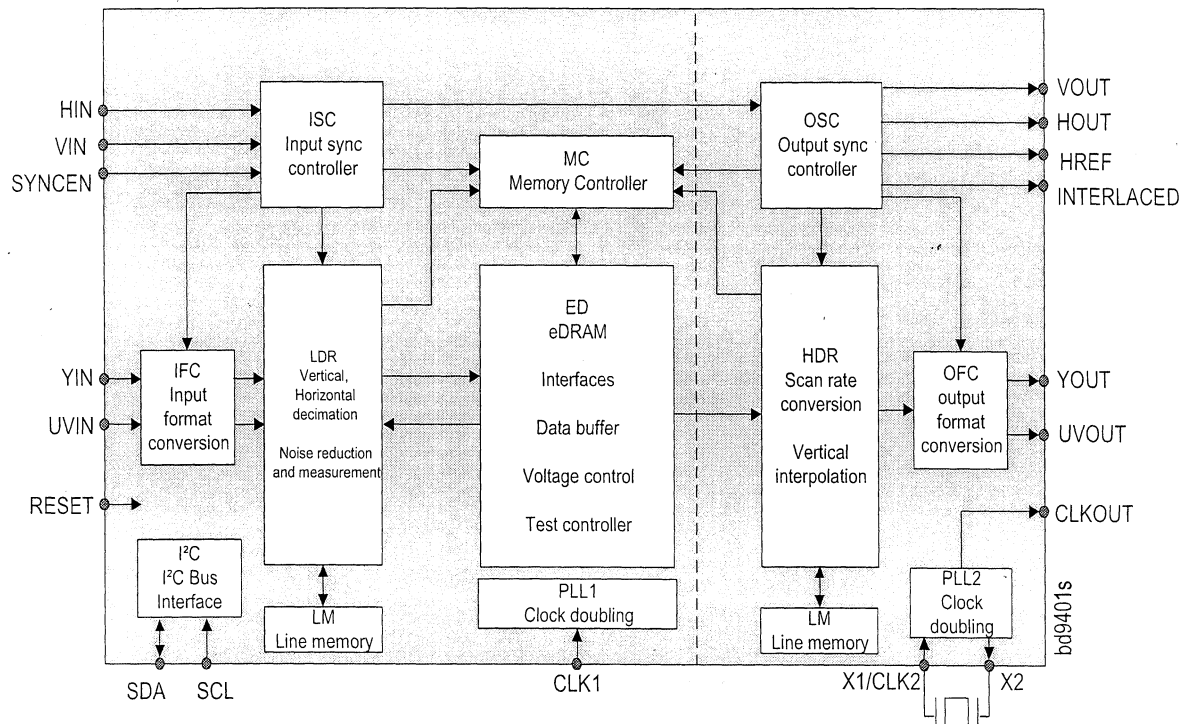
- **Flexible clock and synchronization concept**
  - Decoupling of the input and output clock system possible

- **Scan rate conversion**
  - Simple 100/120 Hz interlaced scan conversion (e.g. AABB, AA*B*B)
  - Simple progressive scan conversion (e.g. AA*)

- **Flexible digital vertical expansion of the output signal (1.0, ... [1/32] ... , 2.0)**

- **Flexible output sync controller**
  - Flexible positioning of the output signal
  - Flexible programming of the output sync raster

- **Signal manipulations**
  - Insertion of coloured background
  - Vertical and/or horizontal windowing with four different speed factors
  - Flash generation
  - Still field
  - Support of split screen applications
  - Multiple picture display - Tuner scan (4 and 16 times for 4:3, 12 times for 16:9 tubes)
  - Support of multi picture display with PIP or front-end processor with integrated scaler
    (e.g. 9 times display of PIP pictures, picture tracking, random pictures,
    still-in-moving picture, moving-in-still picture)

- **I²C-bus control (400 kHz)**

- **P-MQFP-64 package**

- **3.3 V ± 5% supply voltage**

SERVICE ADJUSTMENTS

Enter the service Mode :

You need the special remote control to enter and exit the service menü of the TV (You can supply it from manufacturer.) All buttons of service RC are same with user remote control , only service in/out key are added to the service remote control.

IF Modüle Adjustment :

Apply a RF signal with amplitude 65 ±1dBuV to the antenna input of TV from a pattern generator. (switch sound carrier to off and switch "Video ext" to on)
Connect an osciloscope to pin ≠10 (IF1) of Tuner and ground.Adjust the amplitude of signal 600±20mVpp with P102 potantiometer.

Secreen Adjustment :

Enter the Service menü with service R/C and select "Video" submenü. In this option, select "HOLD" button. Screen will be blank and a line appears in the middle of screen. In this case, adjust the screen potentiometer to the level where the line is just visiable firstly.

Geometry Adjustment :

- 20.2 chassis have two Geometry adjustment memories which are Geometry PAL and Geometry NTSC.
- Apply a signal with FUBK or Philips test pattern.
- Both PAL and NTSC geometry adjustments have to be completed for all versions.
- Adjust vertical width at " **V-size** ", vertical linearite at " **V-line** ", horizontal width **at " EW-width "**, general parabola at " **EW-Parabola** " , horizontal centering at " **H-shift** ", trapezium at "**EW- trapezium**", Upper corner parabola at " **EW-Upper corner**", lower corner parabola at "**EW-lower corner**", "**BOW**" and " **S-correction**".
- In service menü, do not adjust "NVM-edit adres (hex)", "NVM-edit data(hex) items and "Reset Tv set" subtitle. Reset TV set subtitle is releated and used for factory adjustments only.
- For NTSC geometry adjustment , apply a NTSC signal to scart 1 (AV1) from a pattern generator with FUBK or Philips test pattern. Enter the service menü and select "Geometry" submenü. In this case, the title of Geometry submenü is "Geometry (NTSC)" on screen.
  After geometry adjustments exit from service menü.
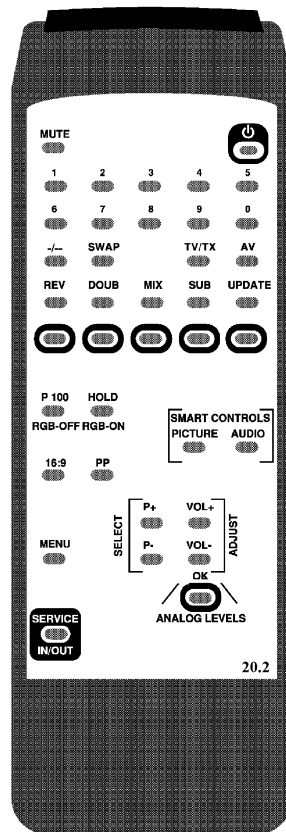
Service Mode

- Video
- Geometry
- Options 1
- Options 2
- Reset TV set

See Table 1
See Table 2

Options 1

Standard BG	▲ * ▼	
Standard DK	▲ * ▼	
Standard I	▲ * ▼	
Standard L	▲ * ▼	
UHF Only	▲ NO ▼	
ATS single run	▼ YES ▲	
AV3 input	▼ YES ▲	
Factory:Poweron	▲ NO ▼	
Factory:I2C off	▲ NO ▼	
Test pattern	▲ NO ▼	
VGA input	▲ NO ▼	
Subwoofer output	▲ NO ▼	
Teletext Top	▲ NO ▼	
Picture tube	▲ NO ▼	

Options 2

Background color Y	▲04
Background color U	▲03
Background color V	▲01
Tuner Type	▲01
Sound detection delay	▲05
Start DVCO auto adjust	▲
NUM-edit adress(hex)	▲ - - -
NUM-edit data (hex)	▲ - - -

Reset TV set

Set to factory defaults

Press ☐ to reset complete NVM

Press ■ to reset w/o programme

* Depends on model and country

20.2 SERVICE SETUP

VIDEO	28inch	28inch 16/9 SUPER FLAT	28inch 16/9 PURE FLAT	29inch PURE FLAT	29inch SUPER FLAT	32inch SUPER FLAT	32inch PURE FLAT	33inch
Red Drive	▲ 015	019	019	019	019	019	019	019
Blue Drive	▲ 014	017	017	017	016	017	017	017
Green Drive	▲ 013	015	016	016	015	016	016	016
Red Cutoff	▲ 015	015	015	015	015	015	015	015
BlueCutoff	▲ 014	014	014	013	014	014	014	014
Green Cutoff	▲ 013	013	013	013	013	013	013	013
BCLThreshold	▲ +007	+007	+006	+008	+007	+008	+008	+008
YC-Delay	▲ 000	000	000	000	000	000	000	000
Horizontal OSD Pos.	▲ -024	-024	-024	-024	-024	-024	-024	-024
Vertical OSD pos.	▲ +004	+004	+004	+004	+004	+004	+004	+004

Table 1

Geometry	28inch	28inch 16/9 SUPER FLAT	28inch 16/9 PURE FLAT	29inch PURE FLAT	29inch SUPER FLAT	32inch SUPER FLAT	32inch PURE FLAT	33inch
V-Size	▲ -043	-005	+002	-018	-052	-065	-032	-043
V-Shift	▲ +001	+003	+001	-002	-001	+002	000	+001
V-Lin	▲ 000	000	000	000	000	000	000	000
S-Corretion	▲ +040	+028	+028	+040	+040	+028	+028	+040
EW-Width	▲ +028	+053	+060	+042	+060	+064	+058	+028
EW-Parabola	▲ -062	-049	-048	-053	-052	-047	-043	-062
H-Shift	▲ -004	-003	+001	+001	-005	+001	-004	-004
EW-Trapezium	▲ -011	-003	-009	-013	-005	-008	-014	-011
EW-Upper Corner	▲ +014	+010	+007	+009	+015	+007	+001	+014
EW-Lower Corner	▲ +020	+013	+011	+021	+021	+011	+012	+020
Hor;EHT	▲ -025	-025	-025	-025	-025	-025	-025	-025
Vert,EHT	▲ -020	-020	-020	-020	-020	-020	-020	-020
Bow	▲ 000	000	000	000	000	000	000	000

Table 2
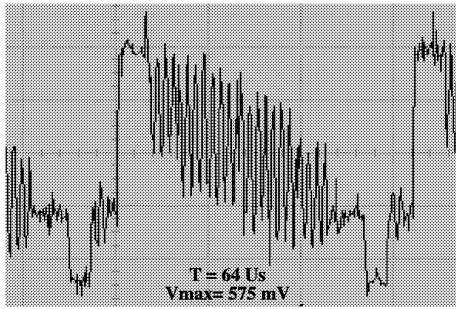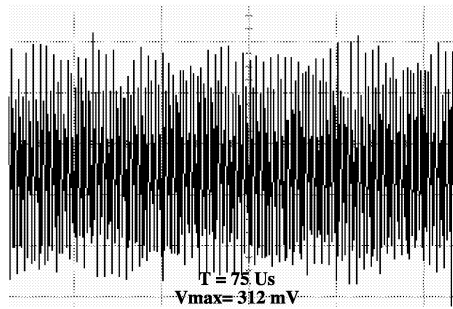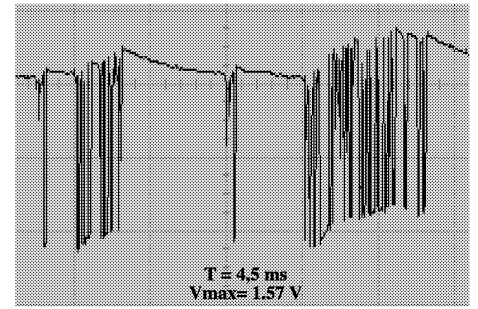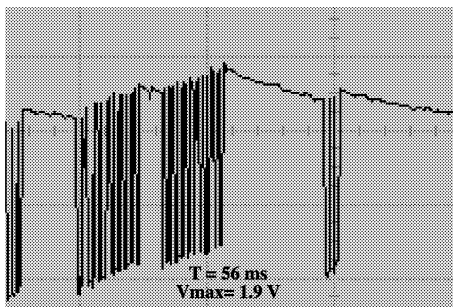
Service Mode
Video ▲
Geometry ▲
Options 1 ▲
Options 2 ▲
Reset TV set ▲

WAVE FORMS

T = 64 Us
Vmax= 575 mV

CVBS
CN 703A PIN 2

T = 75 Us
Vmax= 312 mV

QSS
CN 703A PIN 1

T = 4,5 ms
Vmax= 1.57 V

SCL
CN 703A PIN 7

T = 56 ms
Vmax= 1.9 V

SDA
CN 703A PIN 8

T = 62 Us
Vmax= 530 V

CVBS FB
CN 703A PIN 16

T = 980 Us
Vmax= 150 mV

IF 2
TUNER PIN 11

T = 32 Us
Vmax= 4.7 V

OSD BL
CN 501A PIN 4

T = 192 Us
Vmax= 750 mV

OSD B
CN 501A PIN 3

T = 96 Us
Vmax = 710 mV

OSD G
CN 501A PIN 2

T = 32 Us
Vmax = 770 mV

OSD R
CN 501A PIN 1

T = 1,8 ms
Vmax = 5 V

IR LED
CN 502A PIN 7

T = 32 Us
Vmax = 4.2 V
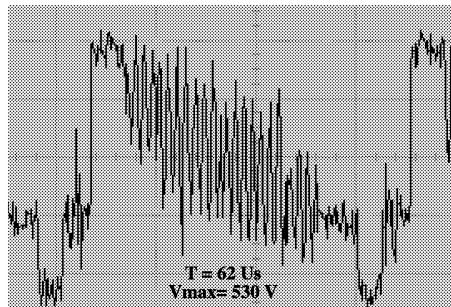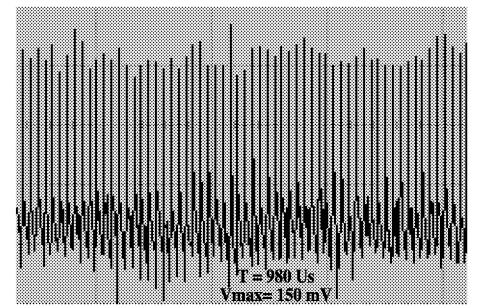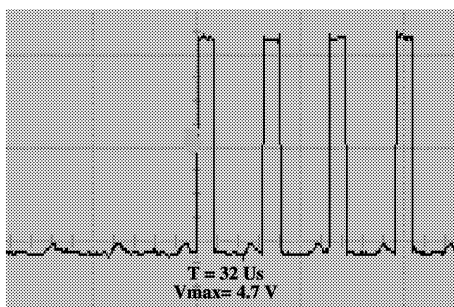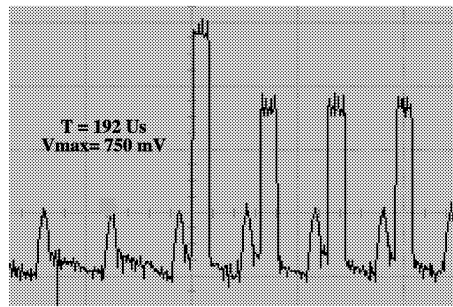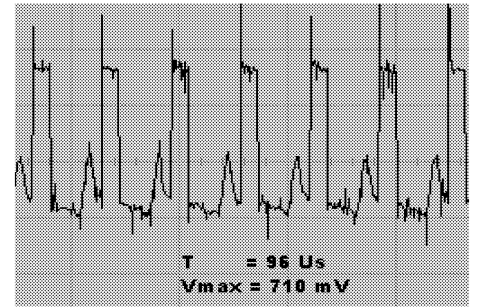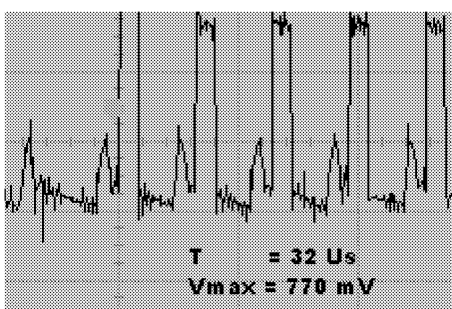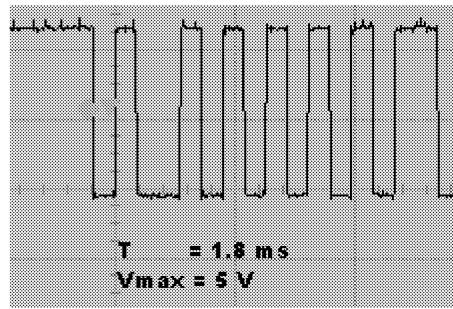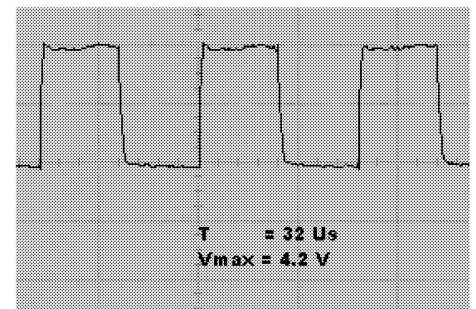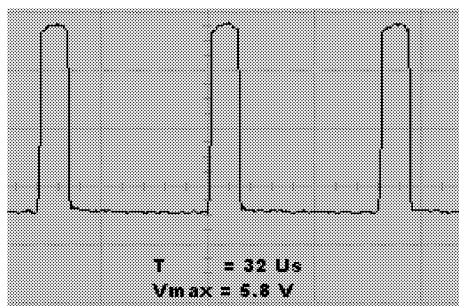
H Drive
CN 802A PIN 8

PH12
CN 802A PIN 7
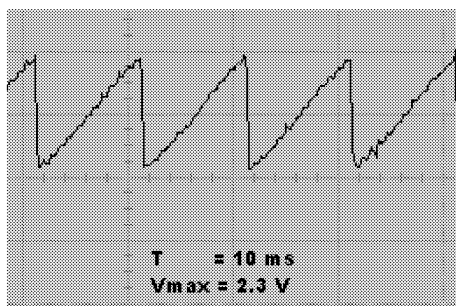
V Drive (-)
CN 802A PIN5
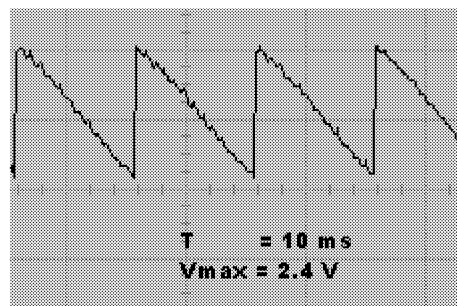
V Drive (+)
CN 802A PIN 4
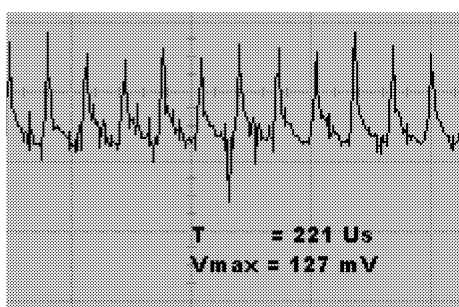
E/W
CN 802A PIN 2
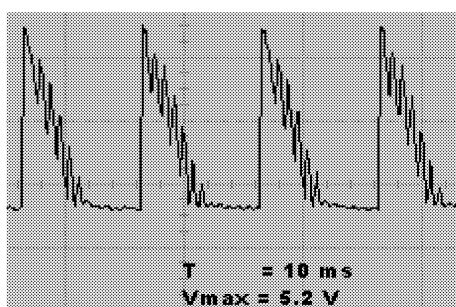
V PROT
CN 802A PIN 6
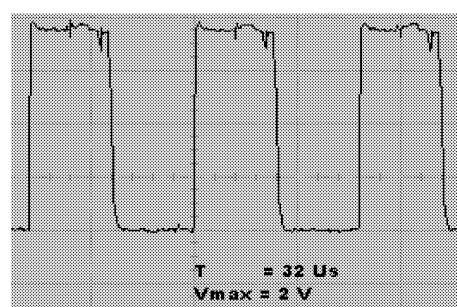
H Drive
Q203 Gate
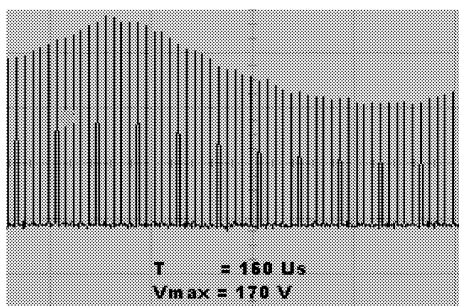
VERT.OUT
D207 Katot
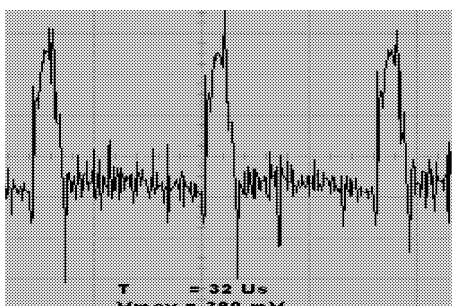
HEATER
CRT X902 PIN 2
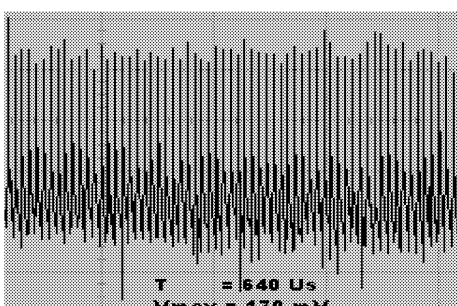
IF 2
TUNER PIN 10
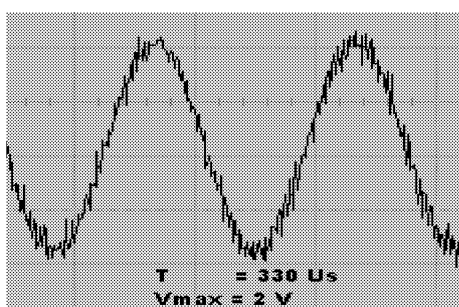
L OUT
CN 701A PIN 5
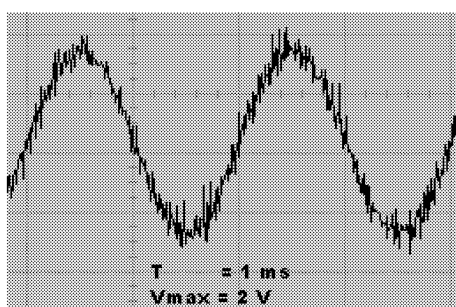
R OUT
CN 701A PIN 6
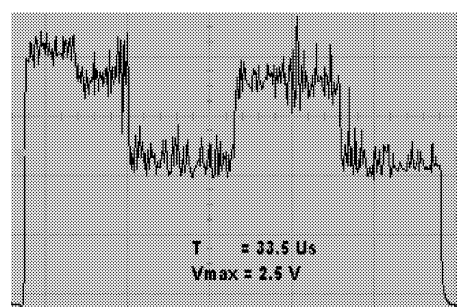
RED
CRT X901 PIN 1
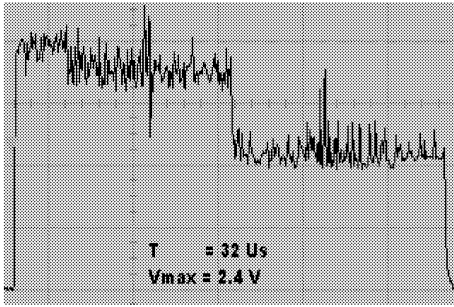
GREEN
CRT X901 PIN 2
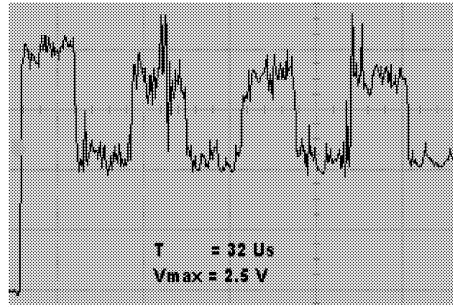
BLUE
CRT X901 PIN 3
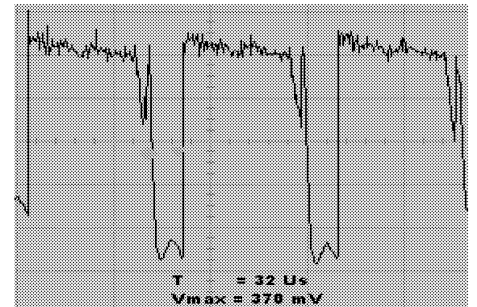
CUT OFF
CRT X901 PIN 4
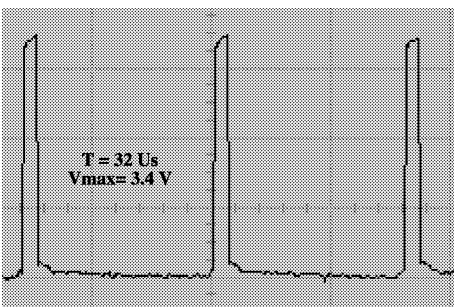
HS2
CN 501A PIN 11

VS2
CN 501A PIN 12
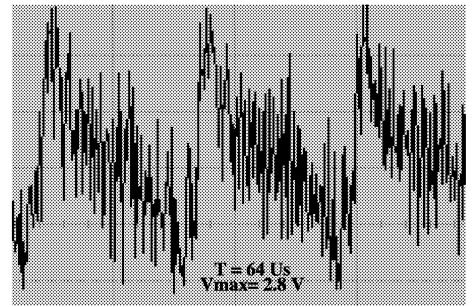
CVBS TTX
CN 501A PIN 13

CHANNEL TABLE FOR STANDARD B/G (CCIR)

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)	Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C01	AU 0	46.25	85.125	1.362	C61	K61	791.25	830.125	13.282
C02	K2	48325	87.125	1.394	C62	K62	799.25	838.125	13.410
C03	K3	55.25	94.125	1.506	C63	K63	807.25	846.125	13.538
C04	K4	62.25	101.125	1.618	C64	K64	815.25	854.125	13.666
C05	K5	175325	214.125	3.426	C55	K65	823.25	862.125	13.794
C06	K6	182.25	221.125	3.538	C66	K66	831.25	870.125	13.922
C07	K7	189.25	228.125	3.650	C67	K67	839.25	878.125	14.050
C08	K8	196.25	235.125	3.762	C88	K68	847.25	886.125	14.178
C09	K9	203.25	252.125	3.874	C99	K69	855.25	894.125	14.306
C10	K10	210.25	249.125	3.986					
					C70	EX	863.25	902.125	14.434
C11	K11	217.25	256.125	4.098	C71	EX	871.25	910.125	14.562
C12	K12	224.25	263.125	4.210	C72	EX	879.25	918.125	14.690
C13	A	23.75	92.625	1.482	C73	EX	887.25	926.125	14.818
					C74	EX	69.25	108.125	1.730
C14	B	62.25	101.125	1.618					
C15	C	82.25	121.125	1.938	C75	EX	76.25	115.125	1.842
					C76	EX	83.25	122.125	1.954
C16	D	175.25	214.125	3.426	C77	EX	90.25	129.125	2.066
C17	E	183.75	222.625	3.562	C78	EX	97.25	136.125	2.178
C18	F	192.25	231.125	3.698					
C19	G	201.25	240.125	3.842	C79	201	59.25	98.125	1.570
C20	H	210.25	249.125	3.986	C80	501	93.25	132.125	2.114
C21	K21	475.25	510.125	8.162	S01	S1	105.25	144.125	2.306
C22	K22	479.25	518.125	8.290	S02	S2	112.25	151.125	2.418
C23	K23	487.25	526.125	8.418	S03	S3	119.25	158.125	2.530
C24	K24	495.25	534.125	8.546	S04	S4	126.25	165.125	2.642
C25	K25	503.25	542.125	8.674	S05	S5	133.25	172.125	2.754
C26	K26	511.25	550.125	8.802	S06	S6	140.25	179.125	2.866
C27	K27	519.25	558.125	8.930	S07	S7	147.25	186.125	2.978
C28	K28	527.25	566.125	9.058	S08	S8	154.25	193.125	3.090
C29	K20	535.25	574.125	9.186	S09	S9	161.25	200.125	3.202
C30	R30	543.25	582.125	9.314	S10	S10	168.25	207.125	3.314
C31	R31	551.25	590.125	9.442	S11	S11	231.25	270.125	4.322
C32	K32	559.25	598.125	9.570	S12	S12	238.25	277.125	4.434
C33	K33	567.25	606.125	9.698	S13	S13	245.25	284.125	4.546
C34	K34	575.25	614.125	9.826	S14	S14	252.25	291.125	4.658
C35	K35	583.25	622.125	9.954	S15	S15	259.25	298.125	4.770
C36	K36	591.25	630.125	10.082	S16	S16	266.25	305.125	4.882
C37	K37	599.25	638.125	10.210	S17	S17	273.25	312.125	4.994
C38	K38	607.25	646.125	10.338	S18	S18	280.25	319.125	5.106
C39	K39	615.25	654.125	10.466	S19	S19	287.25	326.125	5.218
C40	K40	623.25	662.125	10.594	S20	S20	294.25	333.125	5.330
C41	K41	631.25	670.125	10.722	S21	S21	303.25	342.125	5.474
C42	K42	639.25	678.125	10.850	S22	S22	311.25	350.125	5.602
C43	K43	647.25	686.125	10.978	S23	S23	319.25	358.125	5.730
C44	K44	655.25	694.125	11.106	S24	S24	327.25	366.125	5.858
C45	K45	663.25	702.125	11.234	S25	S25	335.25	374.125	5.986
C46	K46	671.25	710.125	11.362	S26	S26	343.25	382.125	6.050
C47	K47	679.25	718.125	11.490	S27	S27	351.25	390.125	6.242
C48	K48	687.25	726.125	11.618	S28	S28	359.25	398.125	6.370
C49	K49	695.25	734.125	11.746	S29	S29	367.25	406.125	6.498
C50	K50	703.25	742.125	11.874	S30	S30	375.25	414.125	6.626
C51	K51	711.25	750.125	12.002	S31	S31	383.25	422.125	6.754
C52	K52	719.25	758.125	12.130					
C53	K53	727.25	766.125	12.258	S32	S32	391.25	430.125	6.882
C54	K54	735.25	774.125	12.386	S33	S33	399.25	438.125	7.010
C55	K55	743.25	782.125	12.514	S34	S34	407.25	446.125	7.138
					S35	S35	415.25	454.125	7.266
C56	K56	751.25	790.125	12.642	S36	S36	423.25	462.125	7.394
C57	K57	759.25	798.125	12.770					
C58	K58	767.25	806.125	12.898	S37	S37	431.25	470.125	7.522
C59	K59	775.25	814.125	13.026	S38	S38	439.25	478.125	7.650
C60	K60	783.25	822.125	13.54	S39	S39	447.25	486.125	7.778
					S40	S40	455.25	494.125	7.906
					S41	S41	463.25	502.125	8.054

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CHANNEL FOR STANDARD I+

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)	Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C01	R1	49.75	88.625	1.362	C61	R61	791.25	830.125	13.282
C02	R2	59.25	98.125	1.570	C62	R62	799.25	838.125	13.410
C03	R3	77.25	116.125	1.858	C63	R63	807.25	846.125	13.538
C04	R4	85.25	124.125	1.986	C64	R64	815.25	854.125	13.666
C05	R5	93.25	132.125	2.114	C55	R65	823.25	862.125	13.794
C06	R6	175.25	214.125	3.426	C66	R66	831.25	870.125	13.922
C07	R7	183.25	222.625	3.554	C67	R67	839.25	878.125	14.050
C08	R8	191.25	230.125	3.682	C68	R68	847.25	886.125	14.178
C09	R9	199.25	238.125	3.810	C69	R69	855.25	894.125	14.306
C10	R10	207.25	246.125	3.938	C70	170	863.25	902.125	14.434
C11	R11	215.25	254.125	4.066	C71	171	871.25	910.125	14.562
C12	R12	223.25	262.125	4.194	C72	172	879.25	918.125	14.690
					C73	173	887.25	926.125	14.818
C21	R21	471.25	510.125	8.162					
C22	R22	469.25	518.125	8.290	S01	S1	103.25	142.125	2.274
C23	R23	487.25	526.125	8.418	S02	S2	111.25	150.125	2.402
C24	R24	495.25	534.125	8.546	S03	S3	119.25	158.125	2.530
C25	R25	503.25	542.125	8.674	S04	S4	127.25	166.125	2.658
					S05	S5	135.25	174.125	2.786
C26	R26	511.25	550.125	8.802	S06	S6	143.25	182.125	2.914
C27	R27	519.25	558.125	8.930					
C28	R28	527.25	566.125	9.058	S07	S7	151.25	190.125	3.042
C29	R29	535.25	574.125	9.186	S08	S8	159.25	198.125	3.170
C30	R30	543.25	582.125	9.314	S09	S9	167.25	206.125	3.298
					S10	S10	231.25	270.125	4.322
C31	R31	551.25	590.125	9.442					
C32	R32	559.25	793.125	9.570	S11	S11	239.25	278.125	4.450
C33	R33	567.25	606.125	9.698	S12	S12	247.25	286.125	4.578
C34	R34	575.25	614.125	9.826	S13	S13	255.25	294.125	4.706
C35	R35	583.25	622.125	9.954	S14	S14	263.25	302.125	4.834
					S15	S15	271.25	310.125	4.962
C36	R36	591.25	630.125	10.082					
C37	R37	599.25	638.125	10.210	S16	S16	279.25	318.125	5.090
C38	R38	607.25	646.125	10.338	S17	S17	287.25	325.125	5.218
C39	R39	615.25	654.125	10.466	S18	S18	295.25	334.125	5.346
					S19	S19	303.25	342.125	5.474
C40	R40	623.25	662.125	10.594					
C41	R41	631.25	670.125	10.722	S11	S11	311.25	350.125	5.602
C42	R42	639.25	678.125	10.850	S23	S23	319.25	358.125	5.730
C43	R43	647.25	686.125	10.978	S24	S24	327.25	366.125	5.858
C44	R44	655.25	694.125	11.106	S25	S25	335.25	374.125	5.986
					S26	S26	343.25	382.125	6.050
C45	R45	663.25	702.125	11.234					
C46	R46	671.25	710.125	11.362	S27	S27	351.25	390.125	6.242
C47	R47	679.25	718.125	11.490	S28	S28	359.25	398.125	6.370
C48	R48	687.25	726.125	11.618	S29	S29	367.25	406.125	6.498
C49	R49	695.25	734.125	11.746	S30	S30	375.25	414.125	6.626
					S31	S31	383.25	422.125	6.754
C50	R50	703.25	742.125	11.874					
C51	R51	711.25	750.125	12.002	S32	S32	391.25	430.125	6.882
C52	R52	719.25	758.125	12.130	S33	S33	399.25	438.125	7.010
C53	R53	727.25	766.125	12.258	S34	S34	407.25	446.125	7.138
C54	R54	735.25	774.125	12.386	S35	S35	415.25	454.125	7.266
C55	R55	743.25	782.125	12.514	S36	S36	423.25	462.125	7.394
C56	R56	751.25	790.125	12.642	S37	S37	431.25	470.125	7.522
C57	R57	759.25	798.125	12.770	S38	S38	439.25	478.125	7.650
C58	R58	767.25	806.125	12.898	S39	S39	447.25	486.125	7.778
C59	R59	775.25	814.125	13.026	S40	S40	455.25	494.125	7.906
C60	R60	783.25	822.125	13.154	S41	S41	463.25	502.125	8.034

CHANNEL FOR STANDARD D/K (OIRT)

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C01	R1	49.75	88.625	1.418
C02	R2	59.25	98.125	1.570
C03	R3	77.25	116.125	1.858
C04	R4	85.25	124.125	1.986
C05	R5	93.25	132.125	2.114
C06	R6	175.25	214.125	3.426
C07	R7	183.25	222.625	3.554
C08	R8	191.25	230.125	3.682
C09	R9	199.25	238.125	3.810
C10	R10	207.25	246.125	3.938
C11	R11	215.25	254.125	4.066
C12	R12	223.25	262.125	4.194
C21	R21	471.25	510.125	8.162
C22	R22	479.25	518.125	8.290
C23	R23	487.25	526.125	8.418
C24	R24	495.25	534.125	8.546
C25	R25	503.25	542.125	8.674
C26	R26	511.25	550.125	8.802
C27	R27	519.25	558.125	8.930
C28	R28	527.25	566.125	9.058
C29	R29	535.25	574.125	9.186
C30	R30	543.25	582.125	9.314
C31	R31	551.25	590.125	9.442
C32	R32	559.25	598.125	9.570
C33	R33	567.25	606.125	9.698
C34	R34	575.25	614.125	9.826
C35	R35	583.25	622.125	9.954
C36	R36	591.25	630.125	10.082
C37	R37	599.25	638.125	10.210
C38	R38	607.25	646.125	10.338
C39	R39	615.25	654.125	10.466
C40	R40	623.25	662.125	10.594
C41	R41	631.25	670.125	10.722
C42	R42	639.25	678.125	10.850
C43	R43	647.25	686.125	10.978
C44	R44	655.25	694.125	11.106
C45	R45	663.25	702.125	11.234
C46	R46	671.25	710.125	11.362
C47	R47	679.25	718.125	11.490
C48	R48	687.25	726.125	11.618
C49	R49	695.25	734.125	11.746
C50	R50	703.25	742.125	11.874
C51	R51	711.25	750.125	12.002
C52	R52	719.25	758.125	12.130
C53	R53	727.25	766.125	12.258
C54	R54	735.25	774.125	12.386
C55	R55	743.25	782.125	12.514
C56	R56	751.25	790.125	12.642
C57	R57	759.25	798.125	12.770
C58	R58	767.25	806.125	12.898
C59	R59	775.25	814.125	13.026
C60	R60	783.25	822.125	13.154
C61	K61	791.25	803.125	13.282
C62	K62	299.25	838.125	13.410
C63	K63	807.25	846.125	13.538
C64	K64	815.25	854.125	13.666
C65	K65	823.25	862.125	13.794

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C61	R61	791.25	830.125	13.262
C62	R62	799.25	838.125	13.410
C63	R63	807.25	846.125	13.538
C64	R64	815.25	854.125	13.666
C55	R65	823.25	862.125	13.794
C66	R66	831.25	870.125	13.922
C67	R67	839.25	878.125	14.050
C68	R68	847.25	886.125	14.178
C69	R69	855.25	894.125	14.306
S01	S1	103.25	142.125	2.274
S02	S2	111.25	150.125	2.402
S03	S3	119.25	158.125	2.530
S04	S4	127.25	166.125	2.658
S05	S5	135.25	174.125	2.786
S06	S6	143.25	182.125	2.914
S07	S7	151.25	190.125	3.042
S08	S8	159.25	198.125	3.170
S09	S9	167.25	206.125	3.298
S10	S10	231.25	270.125	4.322
S11	S11	239.25	278.125	4.450
S12	S12	247.25	286.125	4.578
S13	S13	255.25	294.125	4.706
S14	S14	263.25	302.125	4.834
S15	S15	271.25	310.125	4.962
S16	S16	279.25	318.125	5.090
S17	S17	287.25	325.125	5.218
S18	S18	295.25	334.125	5.346
S19	S19	303.25	342.125	5.474
S22	S22	311.25	350.125	5.602
S23	S23	319.25	358.125	5.730
S24	S24	327.25	366.125	5.858
S25	S25	335.25	374.125	5.986
S26	S26	343.25	382.125	6.050
S27	S27	351.25	390.125	6.242
S28	S28	359.25	398.125	6.370
S29	S29	367.25	406.125	6.498
S30	S30	375.25	414.125	6.626
S31	S31	383.25	422.125	6.754
S32	S32	391.25	430.125	6.882
S33	S33	399.25	438.125	7.010
S34	S34	407.25	446.125	7.138
S35	S35	415.25	454.125	7.266
S36	S36	423.25	462.125	7.394
S37	S37	431.25	470.125	7.522
S38	S38	439.25	478.125	7.650
S39	S39	447.25	486.125	7.778
S40	S40	455.25	494.125	7.906
S41	S41	463.25	502.125	8.034

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)	Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C02	L2	55.75	90.125	1.442	C61	K61	791.25	830.125	13.282
C03	L3	60.50	94.875	1.518	C62	K62	799.25	838.125	13.410
C04	L4	63.75	98.125	1.570	C63	K63	807.25	846.125	13.538
C05	L5	176.00	214.875	3.438	C64	K64	815.25	854.125	13.666
					C55	K65	823.25	862.125	13.794
C06	L6	184.00	222.875	3.566					
C07	L7	192.00	230.875	3.694	C66	K66	831.25	870.125	13.922
C08	L8	200.00	238.875	3.822	C67	K67	839.25	878.125	14.050
C09	L9	208.00	246.875	3.950	C68	K68	847.25	886.125	14.178
C10	L10	216.00	254.875	4.078	C69	K69	855.25	894.125	14.306
					C70	EX	863.25	902.125	14.434
C11	LUX	189.25	228.125	3.650					
					S01	B	116.75	155.625	2.490
C12	K6	182.25	221.125	3.538	S02	C	128.75	167.625	2.682
C13	K8	196.25	235.125	3.762	S03	D	140.75	179.625	2.874
C14	K10	210.25	249.125	3.986	S04	E	152.75	191.625	3.066
					S05	F	164.75	203.625	3.258
C21	K21	471.25	510.125	8.162					
C22	K22	479.25	518.125	8.290	S06	G	176.75	215.625	3.450
C23	K23	487.25	526.125	8.418	S07	S	188.75	227.625	3.642
C24	K24	495.25	534.125	8.546	S08	I	200.75	239.625	3.834
C25	K25	503.25	543.025	8.674	S09	J	212.75	251.625	4.026
					S10	K	224.75	263.625	4.218
C26	K26	511.25	550.125	8.802					
C27	K27	519.25	558.125	8.930	S11	L	236.75	275.625	4.410
C28	K28	527.25	566.125	9.058	S12	M	248.75	287.625	4.602
C29	K29	535.25	574.125	9.186	S13	N	260.75	299.625	4.794
C30	K30	543.25	583.025	9.314	S14	O	272.75	311.625	4.986
					S15	P	284.75	323.625	5.178
C31	K31	551.25	590.125	9.442	S16	Q	296.75	335.625	5.370
C32	K32	559.25	598.125	9.570					
C33	K33	567.25	606.125	9.698	S21	S21	303.25	343.025	5.474
C34	K34	575.25	614.125	9.826	S22	S22	311.25	350.125	5.602
C35	K35	583.25	623.025	9.954	S23	S23	319.25	358.125	5.730
					S24	S24	327.25	366.125	5.858
C36	K36	591.25	630.125	10.082	S25	S25	335.25	374.125	5.986
C37	K37	599.25	638.125	10.210					
C38	K38	607.25	646.125	10.338	S26	S26	343.25	383.025	6.050
C39	K39	615.25	654.125	10.466	S27	S27	351.25	390.125	6.242
					S28	S28	359.25	398.125	6.370
C40	K40	623.25	662.125	10.594	S29	S29	367.25	406.125	6.498
C41	K41	631.25	670.125	10.722	S30	S30	375.25	414.125	6.626
C42	K42	639.25	678.125	10.850					
C43	K43	647.25	686.125	10.978	S31	S31	383.25	423.025	6.754
C44	K44	655.25	694.125	11.106					
					S32	S32	391.25	430.125	6.882
C45	K45	663.25	702.125	11.234	S33	S33	399.25	438.125	7.010
C46	K46	671.25	710.125	11.362	S34	S34	407.25	446.125	7.138
C47	K47	679.25	718.125	11.490	S35	S35	415.25	454.125	7.266
C48	K48	687.25	726.125	11.618	S36	S36	423.25	463.025	7.394
C49	K49	695.25	734.125	11.746					
C50	K50	703.25	742.125	11.874	S37	S37	431.25	470.125	7.522
					S38	S38	439.25	478.125	7.650
C51	K51	711.25	750.125	12.002	S39	S39	447.25	486.125	7.778
C52	K52	719.25	758.125	12.130	S40	S40	455.25	494.125	7.906
C53	K53	727.25	766.125	12.258	S41	S41	463.25	503.025	8.034
C54	K54	735.25	774.125	12.386					
C55	K55	743.25	782.125	12.514					
C56	K56	751.25	790.125	12.642					
C57	K57	759.25	798.125	12.770					
C58	K58	767.25	806.125	12.898					
C59	K59	775.25	814.125	13.026					
C60	K60	783.25	822.125	13.154					

PART LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS				
010712-03	POWER SWITCH S40 4/100A-250						
010760	SLIDE SWITCH 4P2P/4PST		SW701				
010845	TACT SW WITH GREEN LED						
031243	SCART SOKET UPJ-R1-007(ELIM		CN703	CN708			
031530-01	INCHANG/CRT SOCKET ISHM05S-	28"-29"-33"	CN904				
031541	CRT SOCKET 29" DOUBLE FOCUS	32"	CN904				
051599	LINE FILTER 27MH TOROID		L601	DR101			
051706-01	BRIDGECOIL 1MH 20.1		L203				
051707	COIL 6MH E/W 11.1		L201				
051735-02	COIL 150UH CHOKE		L204				
051736-01	COIL 4.2UH LINEARITE V2	28"-32"	L202				
051789	DRIVER TRANSFORMER 20.2		TR201				
051810	COIL- LINEARITE 8.3UH	29"-33"	L202				
051811	COIL PFC 40MH DTH30403H57 E		DR104				
053526	COIL 12UH LAL03		L104				
053549	COIL SOK 1.4 UH		L718	L719			
053623	COIL 1.5UH LAL03		L101				
053711	COIL 10UH K (TAIYO) LAL03		L102	L103	L501	L401	L805
053713	COIL 3.3UH LAL03		L801	L802	L803	L804	
053718	COIL 7*7		L105				
053758	COIL 100UH LAL04		L205				
053785	COIL 2.2UH LAL03		L800				
053786	COIL-CHIP 470R /0805		L701	L704	L709		
054206	FUSE T1A ROUND		F104				
054280	FUSE 3.15AT (215)		ST601				
054300	FUSE T6.3A		F102	F103			
054301	ROLE RT424-012	32"	REL101				
055126	FERRIT BEAD CHIP BK2125HM10		L705	L706	L707	L708	L711
055127	CORE FERRIT	32"-33"					
055553	CORE FERRITE 25*15*12						
055571	FERRITE 5*2*8		B101	B102	B153	B154	
055572	FERRITE 3.5*1.6*5		B153	B154	B202	B203	
056161	CRYSTAL 20.25MHZ		X800				
056162	CRYSTAL 5MHZ		X802				
056210	CER.RESONATOR GSB455E		Q980				
056289	SAW FILTER OFW K9453M		SAW102				
056293	FILTER EMI 1NF		TP805	TP807	TP808	TP809	TP810
056294	FILTER EMI 220PF		TP806	TP821	TP822	TP823	TP824
056295	FILTER EMI 47PF		TP813	TP814	TP815	TP816	TP820
056328-PH3	CPT PH A66EAF071X44 100HZ	28"					
056329-VC5	CPT VC A68EGD038X022 100HZ	29"					
056333-VC4	CPT VC A80AEJ15X522 (100HZ)	33"					
056432-PS1	CPT PS W76EKW10X71 (100HZ)	32"					
056622	CRYSTAL 27MHZ(FUNDEMENTAL)		X801				
056709	SAW FILTER OFW K3953M		SAW101				
056722	SER.FILTER TPS5.5MB		FI101				
056952	CRYSTAL 18.432MHZ +-30PPM		X701				
056953	CRYSTAL 6MHZ CL 20PF		X501				
058235-TR1	DST 20.2 32"16:9 TR/2416 003 3211 42	32"	TR202				
058335-TR1	DST 20.2 33" TERMAL	33"	TR202				
058533-TR1	DST 20.2 TERMAL	28"	TR202				
059235-TR1	SMPS 32 16:9/SL TR/2416002 090209E2 20.2	32"	TR101				
059335-EL1	SMPS 33/SLOT EL/..... 20.2	33"	TR101				
059533-EL1	SMPS 110/SLOT EL/..... 20.2	28"	TR101				
059533-TR1	SMPS 28" 20.2	28"	TR101				
059935-TR1	SMPS CATAL FOC.29PF/SL TR/003321144 20.	29"	TR101				
100473	CFR 47R J 1/4W /6 52MM		R935	R731			
101106	CFR 100R J 1/4W 52MM	28"-33"	R710	R711			
101181	CFR 180R J 1/4W /6 52MM	28"-33"	R951				
101274	CFR 270R J 1/4W /6 52MM	28"	R954				
101683	CFR 680R J 1/4W /6 52MM		R907				
102141	CFR 1K J 1/4W /6 26MM		R901	R920	R925	R931	R953
102157	CFR 1.5K J 1/4W /6 52MM		R921	R926	R932		
102166	CFR 1.5K J 1/4W /6 26MM		R955				

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103136	CFR 10K J 1/4W /6 26MM		R219	R816			
111100	RMO 100R J 2W		R208				
111101	RMO 1K J 1W		R923	R929	R934		
111395	RMO 390R J 1W		R231				
112681	RMO 6.8K J 0.5W		R145				
112683	RMO 6.8R J 1W		R210				
113683	RMO 68K J 1.5W 73MM		R170				
114220	RMO 220K J 1W		R160				
115104	RMO 1M %1 0.5W		R135				
115392	RMO 3.9M %1 0.5W		R136				
115470	RM 4.7M J 1/2W 52MM		R159				
119227-01	RMF 2.2R J 1W	28"	R909				
119392	RMO 0.39R J 2W	28"-29"	R228				
119470	RMO 4.7R J 1W		R405	R406			
119471	RMO 0.47R J 2W	33"	R228				
119478	RMF 0.47R J 1W	32"-33"	R909				
119563	RMO 0.56R J 2W 52MM		R207				
119684	RMF 0.68R J 1W	29"	R909				
119685	RMO 0.68R J 2W	32"	R228				
119690	RMF 6.8R J 1W		R218				
120122	RW 47R J 3W R:5		R206				
121220	RMF 220R J .75W		R222				
121470	RW 470R 3W J R:5		R165				
129229	RWF 0.22R J 0.75W		R223	R225			
129395	RMF 3.9R J 0.5W 52MM		R221				
129471	RF 4.7R J 0.25W 52MM		R416				
129476	RWF 0.47R J 0.75W	33"	R224				
132101	R-VAR 1K (V) 5*3		R150				
132221	R-VAR 22K (H) PT-6KH223A202		P102				
154216	NTC 5.1R M (S234R)		R149				
154225	PTC 18R/3 PIN		R146				
170047	RC-CHIP 4.7R J 1/10W /0805		R414	R415			
170150	RC-CHIP 15R J 1/10W /0805		R147				
170223	RC-CHIP 22R J 1/10W /0805		R847				
170472	RC-CHIP 47R J 1/10W /0805		R820	R831	R842		
170750	RC-CHIP 75R J 1/10W /0805		R811	R821	R837	R838	R713
171102	RC-CHIP 100R J 1/10W /0805		R104	R521	R148	R722	R723
171150	RC-CHIP 150R J 1/10W /0805		R801	R804	R822	R825	R827
171221	RC-CHIP 220R J 1/10W /0805		R121	R819	R830	R843	R845
171270	RC-CHIP 270R J 1/10W /0805		R800	R851	R954		
171332	RC-CHIP 330R J 1/10W /0805		R725	R726	R729		
171393	RC-CHIP 390R J 1/10W /0805		R823	R836	R839		
171471	RC-CHIP 470R J 1/10W /0805		R127				
171560	RC-CHIP 560R J 1/10W /0805		R101	R162			
171685	RC-CHIP 680R J 1/10W 0805		R132	R154			
171822	CFR-CHIP 820R J 1/10W /0805		R152				
172101	RC-CHIP 1K J 1/10W /0805		R163	R117	R125	R530	R803
172225	RC-CHIP 2.2K J 1/10W /0805		R814	R834	R849	R106	R211
172273	RC-CHIP 2.7K J 1/10W /0805		R409	R412	R413	R511	
172335	RC-CIHP 3.3K J 1/10W /0805	28"-29"	R129				
172394	RC-CHIP 3.9K J 1/10W /0805		R116	R129			
172475	RC-CHIP 4.7K J 1/10W /0805		R134	R213	R411	R112	R113
172683	RC-CHIP 6.8K J 1/10W /0805		R105	R512	R513	R214	R233
172823	RC-CHIP 8.2K J 1/10W /0805		R242	R103			
173101	RC-CHIP 10K J 1/10W /0805		R107	R111	R952	R130	R131
173102	RC-CHIP 10K %1 1/10W /0805		R155	R418			
173121	SMD RES-12K 1/8W /1206 (TR						
173123	RC-CHIP 12K J 1/10W /0805		R102	R114	R447	R449	
173154	RC-CHIP 15K J 1/10W /0805		R407	R408			
173182	RC-CHIP 18K J 1/10W /0805		R108	R128	R518	R519	
173221	RC-CHIP 22K J 1/10W /0805		R118	R119	R124	R833	
173273	CFR-CHIP 27K J 1/10W /0805		R533				
173333	RC-CHIP 33K J 1/10W /0805		R115	R133			
173392	RC-CHIP 39K %1 1/10W/0805		R137				
173479	RC-CHIP 47K J 1/10W /0805		R109	R110			
173562	RC-CHIP 56K J 1/10W /0805		R419	R420			

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174104	RC-CHIP 100K J 1/10W /0805		R141	R217			
174106	RC-CHIP 100K %1 1/10W /0805		R234	R235			
174473	RC-CHIP 470K J 1/10W /0805		R151				
175102	RC-CHIP 1M J 1/10W /0805		R501				
179001	RC-CHIP 0R /0805 2*1.25	32"	R464				
179001	RC-CHIP 0R /0805 2*1.25	28"	R956				
179002	RC-CHIP 0R /1206		R981				
201110	CC 100PF K 1KV Y5P R:5		C219	C224	C225		
201226	CC 220PF K 2KV Y5P R:5		C129	C121			
202102	C-CEA 1NF K 50V R:10	28"	C922	C923			
202106	CC 1NF K 50V Y5P R:5	29"-32"-33"	C920	C921	C922	C923	
202220	CC 2.2NF M 250VAC Y5U R:10		C146				
203330	C-PPM 33NF J 630V R:15		C170				
209220	CC 2PF C 50V NPO R:5		C906	C911	C916		
250111	EC 1UF 16V 11*5 R:5		C139	C207	C414	C415	
250113	C-ELA 1UF 25V 11*5 R:5		C210	C413			
250227	EC 2.2UF 16V 11*5 R:5		C106	C108	C832		
250470	EC 4.7UF 16V 11*5 R:5		C854				
251105	EC 10UF 16V 5*3.5 R:5		C701	C705	C710	C711	C723
251107	EC 10UF M 16V 11*5 R:5		C810	C823	C840	C842	C871
251120	EC 10UF 10V 5*4 R:5						
251225	EC 22UF 16V 11*5 R:5		C102	C502	C841	C868	C869
251478	EC 47UF 16V 11*5 R:5		C824	C833	C834	C857	C431
252104	EC 100UF 200V 25*16 R:7.5		C134				
252106	EC 100UF 63V 11*5.8 R:5		C228				
252112	EC 100UF 16V 11*6 R:5		C159	C160	C418	C419	C424
252229	EC 220UF 16V 11*8 R:5		C902				
252476	EC 470UF 25V 11*10 R:5	32"	C403	C405			
252482	EC 470UF 16V 12.5*10 R:5		C901				
253101	EC 1000UF 35V 25*13 R:5		C112	C163			
259478	EC 4.7UF 250V 12*10 R:5		C903	C922	C930	C217	
271820	C-PEM 820PF J 100V R:5		C117				
272154	C-PPM 1.5NF J 1600V R:15	28"-29"-32"	C211				
272181	C-PPM 1.8NF J 1600V R:15	33"	C211				
273104	C-PPM 10NF J 1.5/1.6KV R:22	28"	C208				
273119	C-PPM 11NF J 1.5/1.6KV R:22	32"	C208				
273120	C-PPM 12NF J 1.5/1.6KV R:22	29"	C208				
273222	C-PEM 22NF K 250V R:7.5		C907	C912	C917		
273229	C-PEM 22NF K 100V R:5		C908	C910	C913	C915	C918
273270	C-PPM 27NF J 400V R:15		C209				
273471	C-PEM 47NF K 63V R:5		C940	C941			
274102	C-PEM 100NF J 63V R:5		C202	C408	C409		
274107	C-PEM 100NF J 100V R:5		C401	C440			
274108	C-PPM 100NF J 400V R:10		C122				
274227	C-PEM 220NF J 50V R:5		C232				
274392	C-PEM 390NF J 50V R:5		C527				
274474	C-PEM 470NF J 63V R:5		C904				
274478	C-PEM 470NF K 275VAC R:22.5		C164	C165			
274562	C-PPM 560NF J 250V R:22.5	28"	C214				
274680	C-PEM 680NF K 250V R:27.5		C154				
274683	C-PPM 680NF J 250V R:22.5		C215				
274684	C-PPM 680NF J 250V R:15	32"	C214				
274821	C-PPM 820NF J 250V R:22.5	29"	C214				
275104	C-PPM 1UF J 250V R:22.5	33"	C214				
290100	CC-CHIP 10PF D 50V /0805 NP		C800				
290271	CC-CHIP 27PF K 50V /0805 X7		C862	C866			
290274	CC-CHIP 27PF J 50V NPO 0805		C878	C879			
290333	CC-CHIP 33PF K 50V /0805 X7		C519	C520			
290561	CC-CHIP 56PF J 50V NPO 0805		C808	C809	C814	C724	C756
291101	CC-CHIP 100PF J 50V /1206 N		C981	C982			
291103	CC-CHIP 100PF J 50V /0805 N		C114	C804			
291152	CC-CHIP 150PF J 50V /0805 N		C801				
291225	CC-CHIP 220PF K 50V /0805 X		C802	C132	C212		
291473	CC-CHIP 470PF K 50V /0805 X		C702	C726	C751		
291560	CC-CHIP 560PF J 50V /0805 N		C877				
292110	CC-CHIP 1NF K 50V /0805 X7R		C715	C728	C729	C730	C731

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292151	CC-CHIP 1.5NF K 50V /0805 X		C704	C727	C752	
292180	CC-CHIP 1.8NF K 50V /0805 X		C231	C236		
292223	CC-CHIP 2.2NF K 50V /0805 X		C136			
292334	CC-CHIP 3.3NF K 50V /0805 X		C118			
292476	CC-CHIP 4.7NF K 50V /0805 X		C113	C119	C133	
292561	CC-CHIP 5.6NF K 50V /0805 X		C442			
293108	CC-CHIP 10NF K 50V /0805 X7		C110	C111	C531	C820	C850
293230	CC-CHIP 22NF K 50V /0805 X7		C860	C863		
293332	CC-CHIP 33NF K 50V /0805 X7		C859	C512	C205	
293474	CC-CHIP 47NF K 50V /0805 X7		C206	C230	C234	C425	C515
293681	CC-CHIP 68NF K 25V /0805 X7		C204			
294111	CC-CHIP 100NF K 25V /0805 X		C138	C145	C150	C161	C162
294231	CC-CHIP 220NF K 16V /0805 X		C806	C811	C815	C880	C720
294331	CC-CHIP 330NF K 16V /0805 X		C151	C416	C417	C716	C717
294476	CC-CHIP 470NF K 16V /0805 X		C876			
299152	CC-CHIP 1.5PF C 25V/0805		C725	C755		
299331	CC-CHIP 3.3PF C 50V /0805 N		C825	C826		
300193	DIODE Z. BZX55C9V1-GPS(VISH		DZ901			
300310	DIODE UF5402		D210	D211		
302289	DIODE 1N4148 52MM		D901	D401		
302296	DIODE 1N4148 26MM		D401	D901		
302463	DIODE FUF5404 DO-201AL		D113			
302466	DIODE STTA506F TO220		D207			
303076	DIODE Z. 9V1		DZ901			
303195	DIODE 4148 MELF		D104	D112	D122	D123	D202
303214	DIODE UF4006		D125	D126	D905	
303223	DIODE-CHIP BA682 SOD80		D102	D103		
303232	DIODE BY359-1500		D206			
303306	DIODE UF4007F R:12.5		D201	D208	D209	D212	D213
303307	DIODE BYW29F-200		D106	D107	D111	
303323	DIODE MR856GP (FAGOR)		D114			
303344	DIODE FBI4M5M1 (FAGOR)		D115			
303778	DIODE-CHIP Z. ZMM5.1		D805	D205	D214	
303799	D- ZENER MTZJ12B		D127	D128	D129	D130	D131
303799	D- ZENER MTZJ12B		D127	D128	D129	D130	D131
303815	DIODE SB130		D124			
303816	DIODE-CHIP Z. 10V SOD80		D120	D121	D203	
303817	DIODE-CHIP Z. 33V SOD-106		D218			
303900	LED ROT		D901			
303988	LED LTL 4224 RED (SHORT LEG		D903			
303991	LED IR SIR563SB3F 23/940		D981			
303993	LED LTL4221N D:3 R/D RED		D980			
400831	TRN BC548C		T901	T902		
400987	TRN BC548B		Q115			
400989	TRN BC558B		Q912			
401047	TRN BC337-25					
401141	TRN-CHIP BC848B SOT23		Q102	Q103	Q104	Q105	Q107
401142	TRN-CHIP BC858B SOT23		Q800	Q805	Q808	Q811	Q206
401231	TRN BDX53C		Q208			
401235	TRN 2SC5331		Q204			
401335	TRN STP20NE06LFP		Q112	Q113	Q203	
401336	TRN-CHIP BF799		Q101			
401362	TRN STW13NB60		Q111			
451430	IC SRAM UPD431000AGW-70L		IC504			
451849	IC TDB7808		IC103			
451885-01	IC TL431CLP (ON SEMICONDUCT		IC102			
452297	IC SFH617 OPTO COUPLER		IC105			
452298	IC TDA2822M		IC403			
452300	IC TDA6111Q		IC901	IC902	IC903	
452382	IC-CHIP S3C1840DA9/SMB1		IC980			
452437	IC STV9379FA		IC201			
452521	IR RECEIVER TSOP 1838		IC901			
452795	IC TDA16846		IC101			
452796	IC BRC24C16 EEPROM		IC502			
452797	IC SDA5450 C84 PLCC84S		IC501			
452798	IC TDA9810T N2 SOT137-1 IF		IC101			

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452800	IC MSP3410G PSDIP64 AUDIO P		IC701					
452801	IC TL7705ACP DIL8 SUPPLY VO		IC803					
452803	IC VPC3230D QFP80		IC801					
452804	IC DDP3310B DEFL-CONT.		IC804					
452806	IC L4931CV50 TO220 GER.REGU		IC106					
452845	IC L4931CV33		IC802					
452847	IC SDA9401 QFP64		IC803					
452848	IC TDA6920X PDS028P		IC702					
452878	IC TDA7265 MULTIWAT 11 20.2		IC401					
458256	IC M27C2001 OTP (8*256K)(10		IC503					
528167-AS	DEGAUSSING COIL ASSY 28" BA	28"						
629169-AS	DEGAUS BOB. KPL 29" BAND SARGILI (ORION)	29"						
532168-AS	DEG.BOB.KPL.32"FORMLU 100HZ P.FL.(9R PTC	32"						
533167-AS	DEGAUSING COIL 33"	33"						
6P1140	BC-MN IFUP1 MODULE 29"	29"						
6R2140	BC-MN IFUP1 MODULE 28"	28"						
6X1140	BC-MN IFUP1 MODULE 32"	32"						
W98140	BC-MN IFUP1 MODULE 33"	33"						
6P1165	BC-MN 29" FLAT CRT BOARD	32"						
6R1165	BC-MN CRT BOARD	28"						
6X1165	BC-MN 32" CRT BOARD	29"						
W98165	BC-MN 33" CRT BOARD	33"						
6R2130	CU/S-VHS ASSY 28" 20.2	28"						
6X1172	CU ASSY 28T19/T22-29T12/T17	29"						
6X8172	CU ASSY 32"T20/T21 20.2	32"						
7U1172	CU ASSY 28T05 20.2	28"						
W98172	CU ASSY 33TL5 20.2	33"						
6X8110	BC CHASSIS 32T20 PS/ST/2/H/	32"						
6R2110	BC CHASSIS 28"PS/BG/ST/N/TX	28" PS/BG						
P36110	BC CHASSIS 28" P/ST/NC/2S/H	28" P/ST						
P65110	BC CHASSIS 28" P/DK/NC/2S/H	28" PS/DK						
U23110	BC CHASSIS 29BCT24 PS/DK/NC	29"						
W77110	BC CHASSIS 33" PS/DK/NX/2/H	33"						
6X8170	IR/LED ASSY 32"T20 20.2	32"						
7P2170	IR/LED ASSY 29T17/28T22 20.	29"						
7RZ136-01	TUNER PANASONIC ENV57D44G3		TU401					
7SZ207	WINDOW FILTER R/C BEKO TYPE							
7TT100-AS	MAIN SW ASSY 28TL2/TL3 FILT	29"- 32"						
7UB107-AS	SPEAKER 8R/15W(MAX)21T04/25	29"						
7VA108-AS	TWEETER DYNAMIC D=52 8R/15W	33" -28"						
P98187	RC BEKO TYPE FUME 20.2							
7P7187	RC BEKO TYPE M.GRI BEKO TY							
6X8187	RC ARC.TYPE SILV. 20.2	32"						

20.2 CTV CHASSIS 110°

MICRO PC MODUL

CHROMA DECODER&FEATUREBOX

IC RECEIVER and Keyboard module

IF MODUL

STEREO/NICAM DECODER & SCART MODUL

Front AV and S-Video Module

Head Phone Module

IR Receiver Module for Only Pure Flats

CRT MODUL

20.2 CTV CHASSIS 110°

MAIN BOARD